Indian Archaeology

1956-57

A REVIEW



INDIAN ARCHAEOLOGY 1956-57

A REVIEW

Edited by

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I also thank those of my colleagues who, by their ungrudging assistance, have made the publication of the *Review* possible within a short time.

The 2nd August 1957 A. GHOSH

INDIAN ARCHAEOLOGY 1956-57

- A REVIEW

I. GENERAL

SUBSTANTIAL progress was recorded all over India in the field of explorations and excavations during the year under review. In the Chambal basin in Rajasthan, excavation in the river-section at one place stratigraphically established the co-occurrence of palaeoliths of the Sohan and Madras traditions. At another place, an overlap between the tools of Series I and II seemed to be indicated.

Palaeoliths, both choppers and bifaces, were noticed at several other places situated on the rivers of the Chambal system. An exploration in the Malwa region also brought to light tools of Series I and II, one of the chief centres being the Mandasor region. Implement-bearing deposits were also located in the Tapti and upper Godavari valleys. It is important to note that the fossilized skull discovered at Kalegaon last year *(Indian Archaeology 1955-56—A Review,* p. 5) has now been identified as that of *Bos namadicus* Falconer, ascribed by M. R. Sahni to the Mid-Pleistocene. As tools of Series II were found embedded in the skull itself, there is little doubt that they have to be similarly dated.

Further work at the pre-pottery microlithic site at Birbhanpur in West Bengal successfully associated the microliths with the penultimate terrace of the Damodar river, thus establishing their comparatively high antiquity.

Black-and-red ware of chalcolithic association, with or without microliths, was found at a large number of places in the explored regions in Rajasthan and Malwa.

The Gujarat phase of the Harappa culture continued to be investigated at Lothal, where a systematic town-planning was brought to light, in addition to objects, including seals, typical of the classical Harappa. Significant was the discovery of a black-and-red ware in association with the characteristic red ware. At Prabhas Patan (Somnath), a late phase of the Harappa culture, followed successively by other cultures, was laid bare.

Special reference should be made of the very recent discovery, not mentioned in the following pages, of two sites, Mehgam and Telod, both near the Narmada estuary. A preliminary examination of their material indicates that both of them contain late Harappan pottery. Subject to confirmation by a detailed study, the sites would seem to represent the southernmost stations of the late Harappa culture till now known and would thus be of great significance.

A renewed excavation at Bahal on the Girna in the upper Deccan brought out an interesting sequence of cultures: a chalcolithic culture, first with a thick grey ware and then with a black-on-red painted ware with microliths, succeeded consecutively by the Iron Age cultures typified by a black-and-red ware and the Northern Black Polished and the Red Polished Wares. Across the river was identified a cemetery of the chalcolithic folk, with urn- and pit-burials.

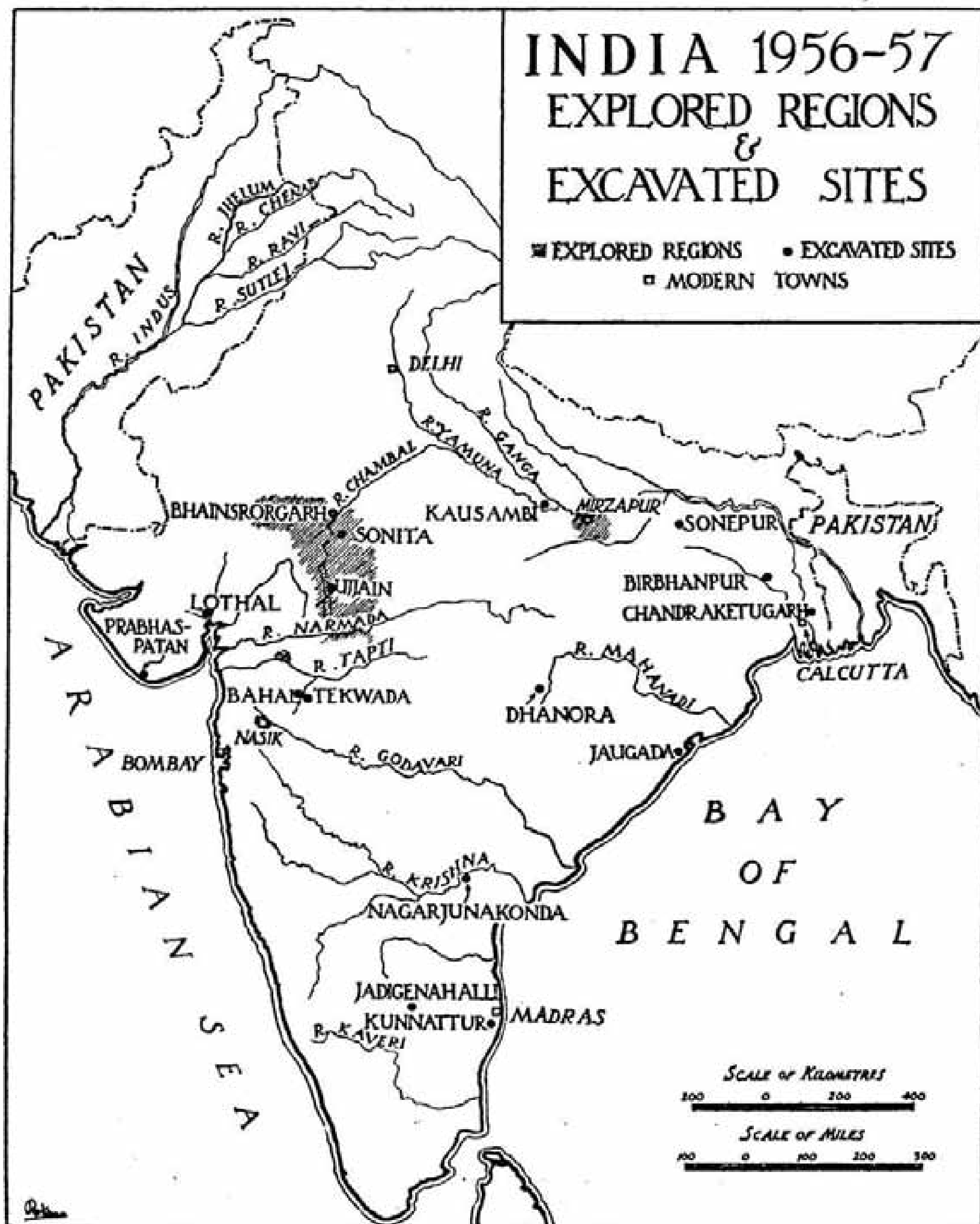

INDIA 1956-57
EXPLORED REGIONS
&
EXCAVATED SITES
EXPLORED REGIONS
EXCAVATED SITES
MODERN TOWNS
PAKISTAN
R. INDUS
R. JHELUM
R. CHENAB
R. RAVI
R. SUTLEJ
DELHI
R. YAMUNA
R. GANGA
R. CHAMBAL
BHAINSRORGARH
SONITA
KAUSAMBI
MIRZAPUR
SONEPUR
PAKISTAN
UJJAIN
LOTHAL
PRABHAS-PATAN
R. NARMADA
R. TAPTI
BIRBHANPUR
CHANDRAKETUGARH
CALCUTTA
R. MAHANADI
BAHAL
TEKWADA
DHANORA
NASIK
R. GODAVARI
JAUGADA
BOMBAY
ARABIAN SEA
BAY OF BENGAL
R. KRISHNA
NAGARJUNAKONDA
JADIGENAHALLI
KUNNATTUR
MADRAS
R. KAVERI
SCALE OF KILOMETRES
SCALE OF MILES

FIG. 1

2. EXPLORATIONS AND EXCAVATIONS[1]

EXPLORATIONS IN RAJASTHAN AND MALWA.—Many palaeolith- and microlith-bearing sites in Rajasthan were discovered in the valleys of the Chambal, Berach and Gambhiri during the last few years *{Indian Archaeology 1953-54—A Review,'* p. 37; *1954-55,* p. 58; *1955-56,* p. 68). An examination of the cliff on the left bank of the Chamli, near Badoli, showed an implementiferous deposit of conglomerate and a deposit of loose gravel overlying the gneissic bench. The surface-collections included tools of the Madras and Sohan industries mixed together and some blade-scrapers and Levallois flakes from the loose gravel. Superficial exploration also revealed semblances of three terrace-formations on the Chambal at several places, at one of which, called Chulia Falls, all the three terraces could be observed. The palaeolithic tools of the region divided themselves into two Series, called respectively Series I and II.

The co-occurrence of Madras and Sohan tools being an important evidence for the study of Stone Age man in India, it was essential to study their sequential interrelationship and obtain a clear typological classification of the tools in the area on the basis of stratigraphy. Accordingly, two relatively undisturbed tool-bearing deposits in the Chambal valley, at Sonita and Bhainsrorgarh respectively, both in Chittorgarh District, were excavated this year by the Western Circle, under Shri S. R. Rao.

The terrace noticed at Sonita, situated between the old and the present courses of the Chambal, 30 miles south of Kotah, possibly corresponded to Terrace 1 of Chulia Falls. The exposed section showed a 4-ft. thick deposit of implementiferous conglomerate overlain by a bed of gravel. The nineteen tools found in the conglomerate consisted of three choppers, four cleavers, eight scrapers and one ovate, the remaining three being of indeterminate shapes (pls. I and II A). The flakes included those of the Clactonion technique. Thus, the existence in the area of Sohan choppers and Madras (Acheulian) bifaces with Clacton flakes was amply established.

The later gravel-deposit bore flakes and flake-tools (pl. II B), such as a Levallois flake and hollow and blade scrapers. The absence of choppers and Acheulian handaxes in these deposits and the presence of flakes with prepared striking platforms and retouched edges suggested a later date for the second industry.

Two implement-bearing deposits were noticed near Bhainsrorgarh, respectively situated on the left banks of the Chambal, at Navghat, and of the Bamini, a tributary of the Chambal. These deposits consisted of a thick layer of conglomerate at the bottom, a thin layer of loose gravel and metamorphosed shale and, lastly, a thick layer of loose gravel with heavy angular pebbles and coarse sand. The conglomerate overlay a deposit of weathered shale representing Terrace 2 of Chulia Falls and was hence later than the one at Sonita; consequently it was harder and less weathered. It yielded one chopper, seven handaxes, five cleavers, nine scrapers and two discoids, all of Series I, besides four flake-tools of Series II (pl. II B), pointing thereby to an overlap between the two Series. . The smaller number of Sohan choppers and the greater number of Madras bifaces are to be accounted for by the probable dying-out of the Sohan industry during the change of the course of the Chambal from near the Chamli to its present bed.

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[1] See fig. 1.

[a] This publication is referred to in the following pages by the year only.

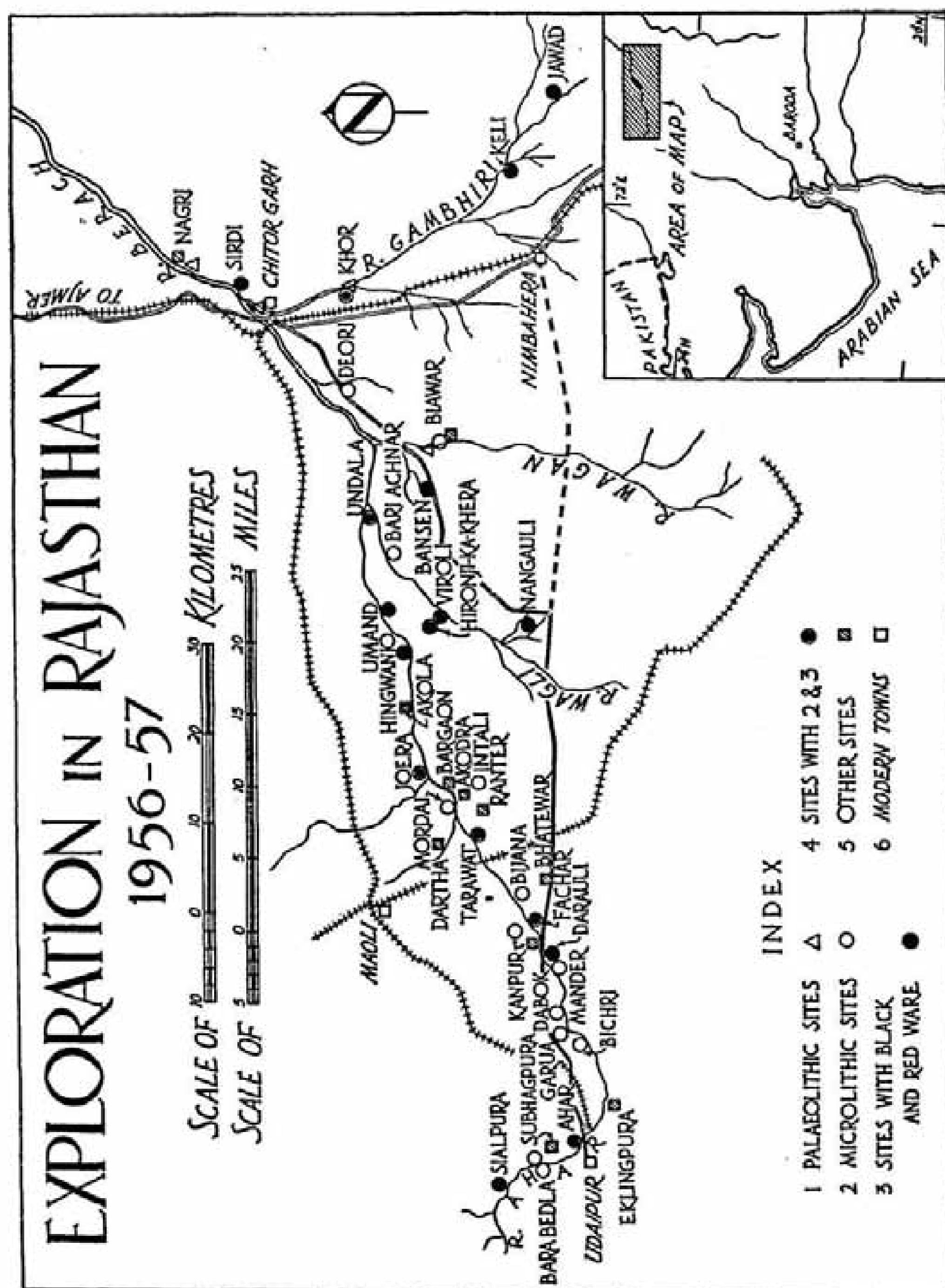

EXPLORATION IN RAJASTHAN
1956-57
SCALE OF KILOMETRES
SCALE OF MILES
INDEX
1 PALAEOLITHIC SITES
2 MICROLITHIC SITES
3 SITES WITH BLACK AND RED WARE
4 SITES WITH 2 & 3
5 OTHER SITES
6 MODERN TOWNS
TO AJMER
NAGRI
SIRDI
CHITOR GARH
KHOR
R. GAMBHIRI
KELI
JAWAD
DEORI
NIMBAHERA
BIAWAR
LUNDALA
BARI ACHNAR
BANSEN
VIROLI
HIRONJI-KA-KHERA
NANGAULI
WAGAN
UMAND
HINGWANIA
AKOLA
JOERA
BARGAON
AKODRA
INTALI
RANTER
MORDAI
DARTHA
TARAWAT
BIJIANA
BHATEWAR
FACHAR
DARAULI
MAOLI
KANPUR
DABOK
MANDER
BICHRI
GARUA
SUBHAGPURA
AHAR
SIALPURA
BARABEDLA
UDAIPUR
EKLINGPURA
R. WAGLI
PAKISTAN
AREA OF MAP
ARABIAN SEA
BARODA

Fig. 2

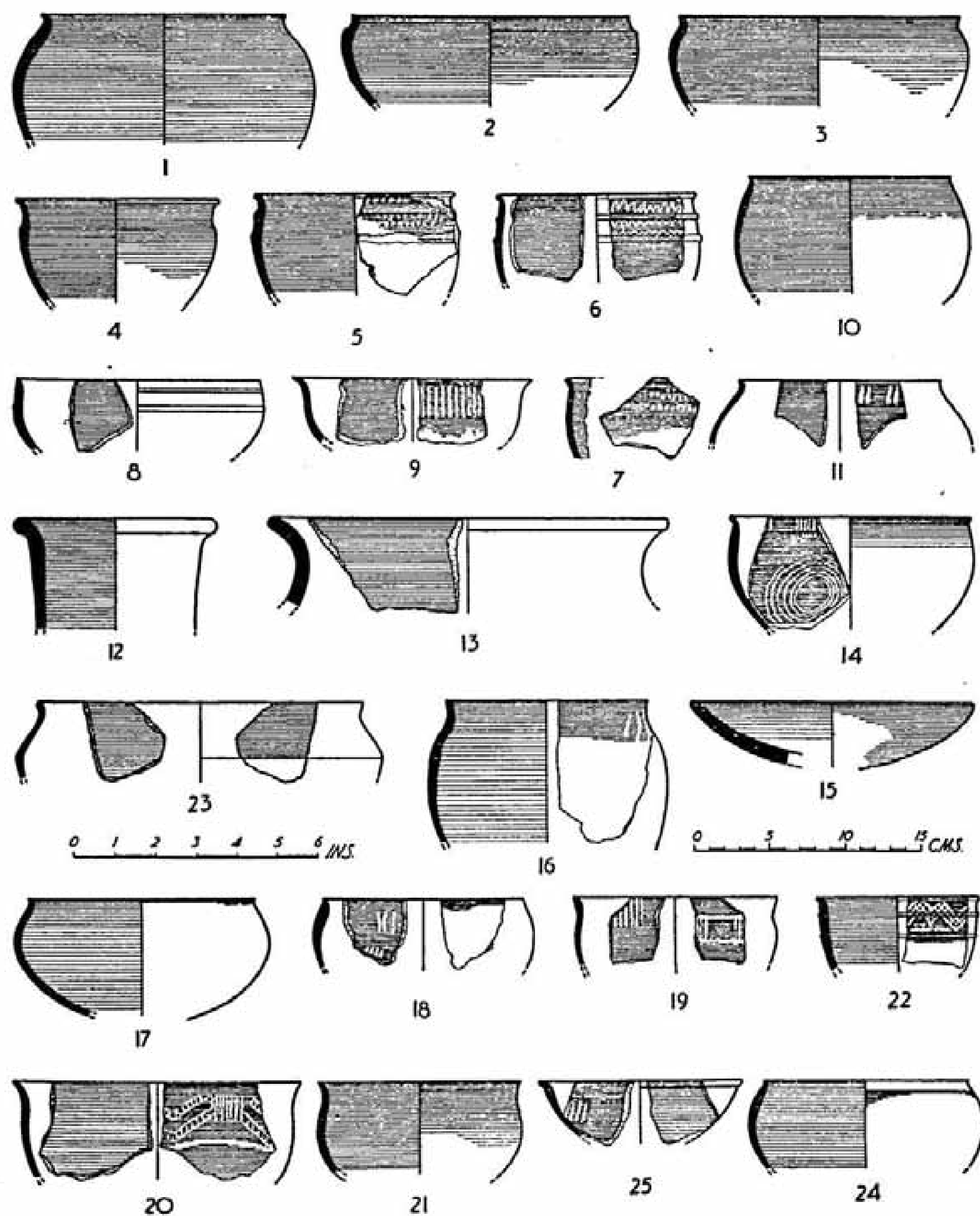


FIG. 3. *Rajasthan: types of black-and-red, red and black wares*

In the next upper layer, of loose gravel and shale, were found a handaxe, a cleaver and a scraper of the Acheulian industry, showing that even this industry had been on the decline and the Series II industry had come to stay. The uppermost gravel-layer yielded a few Levallois flakes and blade-scrapers, falling within the range of Series II.

The Exploration Branch, under Dr. K. N. Puri, explored parts of Udaipur and Chittorgarh Districts in the fertile south-eastern parts of Rajasthan, sheltered by the Aravallis, and the northern parts of Mandasor District in Malwa, Madhya Pradesh, in the valleys of the Ahar-Berach-Gambhiri, Banas, Chambal and Wagan, as the beginning of a thorough investigation of the triangular stretch of land surrounded on all sides by the till-now known horizons of three important protohistoric cultures—on the north, west and south-west by the Harappa culture of Bikaner, Sind and Kathiawad, on the north-east by the Painted Grey Ware culture of the plains and on the east, south and south-east by the chalcolithic culture of central India and the Deccan.

The exploration brought to light sites of various categories (fig. 2), viz. palaeolithic sites, microlithic sites, sites with the black-and-red ware and associated pottery and, lastly, sites of the early historical period. No Harappan site was, however, found.

Palaeoliths (pl. III) were collected from the valleys of the Gambhiri, Wagan and Berach—at Chittor, Khor, Biawar and Nagri, all in Chittorgarh District. They represented a mid-to-late Acheulian stage of the bifacial handaxe-*cum*-cleaver industry, comprising tools made on quartzite flakes and cores alike, with a small percentage of pebble tools of doubtfully Sohan technique. The cleavers, rectangular, triangular or trapezoidal in shape, were of single or double Vaal technique.

Microliths (pls. III B and IV A), without the typical black-and-red ware, were collected from Bara Bedla, Bichri, Garua, Dabok, Mander, Kanpur, Bijana, Mordai and Intali in Udaipur District and from Bari Achnar, Biawar and Deori in Chittorgarh District. They included, apart from fluted cores, parallel-sided and backed blades with triangular or trapezoidal cross-sections, end-scrapers, side-scrapers and notched scrapers and leaf-shaped, triangular and rhomboidal points—of chalcedony, chert, agate or jasper—and larger flakes, cores and lumps, possibly used as casual tools. Cores and blades with crested ridges were fairly common. The latter were occasionally serrated.

Black-and-red ware (fig. 3; pl. IV B), unassociated with microliths, was found at Darauli in Udaipur District, at Hingwanio, Umand, Nangauli, Bansen, Sirdi and Keli in Chittorgarh District and at Jawad in Mandasor District. The ware bore a family-likeness to the chalcolithic pottery found at Ahar *(1954-55,* p. 14). The usual shapes comprised the convex-sided bowl with a flared or everted rim and sometimes with a flanged shoulder, straight-sided bowl with an everted rim, bowl with a carinated shoulder and everted rim and jar with a flared mouth—of a bright-red exterior and black interior. The pots were generally painted externally and occasionally internally in various designs with a whitish pigment, the designs consisting of vertical and oblique strokes, concentric circles, chevrons, dots and intersecting arcs. Besides, sherds of a polished red ware and a burnished black ware were also found in ample quantities.

In addition to Ahar, previously excavated, at Sialpura, Fachar, Tarawat and Joera in Udaipur District and at Undala, Viroli, Hironji-ka-khera and Khor in Chittorgarh District, microliths and the black-and-red ware and associated pottery were found together.

Of the early historical sites, Kanpur, in Udaipur District, yielded a sprinkler and sherds of a polished red ware. Terracotta ring-wells were noticed at Nagri, a famous site 8 miles to the north of Chittorgarh, partly excavated in 1915-16.

Microliths, unassociated with pottery, classed as tools of Series III, were found at Tarra, Bamini and Kalikunya near Bhainsrorgarh and comprised fluted cores, blades, points and lunates—variously of chert, chalcedony and agate.

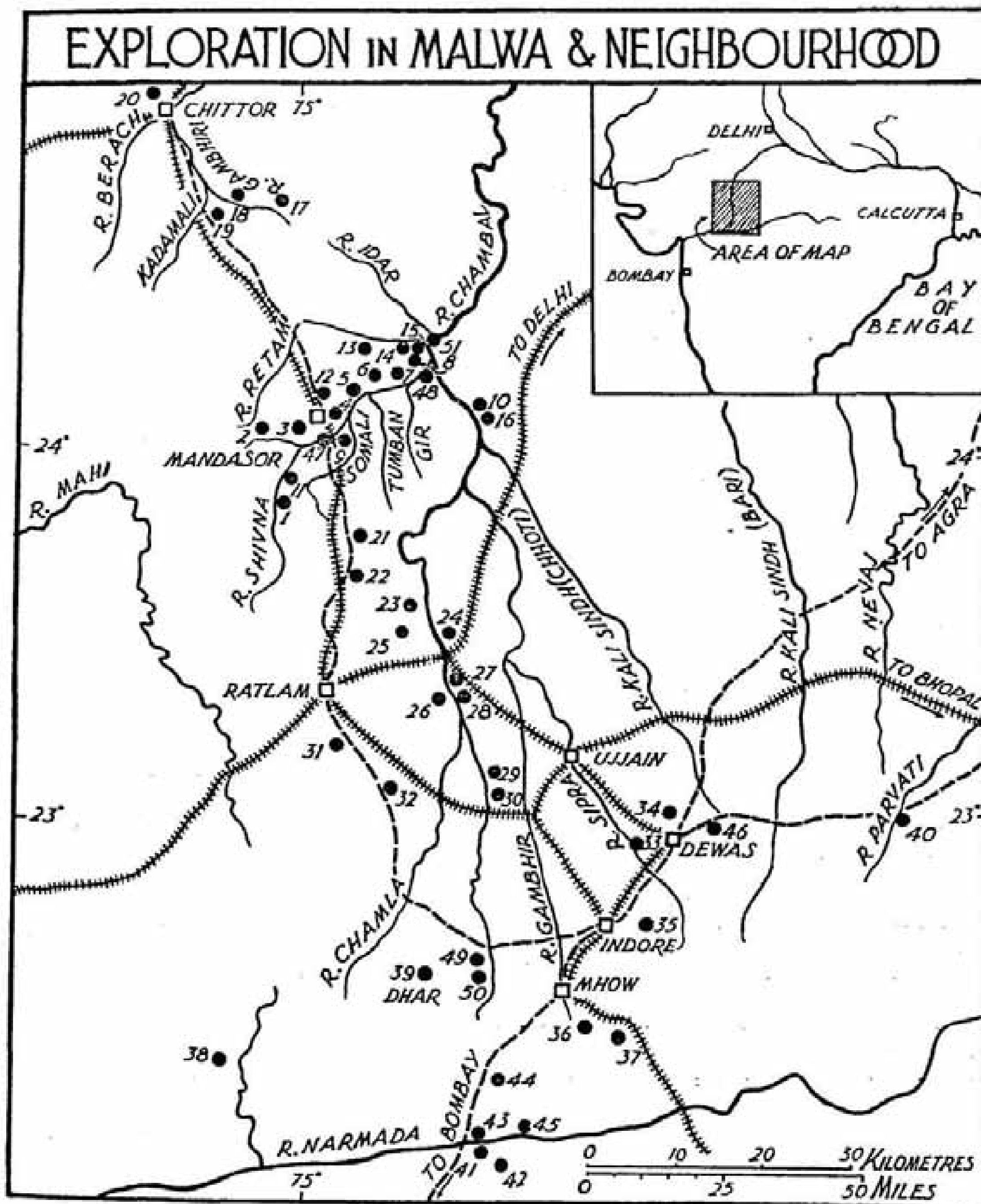

EXPLORATION IN MALWA & NEIGHBOURHOOD
CHITTOR
75°
R. BERACH
R. GAMBHIRI
KADAMALI
R. IDAR
R. CHAMBAL
TO DELHI
R. RETAM
MANDASOR
SOMALI
TUMBAN
GIR
R. MAHI
R. SHIVNA
R. KALI SINDH (CHHOTI)
R. KALI SINDH (BARI)
R. NEVAJ
TO AGRA
TO BHOPAL
RATLAM
UJJAIN
R. SIPRA
DEWAS
R. PARVATI
R. CHAMLA
R. GAMBHIR
INDORE
MHOW
DHAR
BOMBAY
TO BOMBAY
R. NARMADA
24°
23°
KILOMETRES
MILES
DELHI
CALCUTTA
BOMBAY
AREA OF MAP
BAY OF BENGAL

FIG. 4

River-valleys	Sites with tools of Series I	Sites with tools of Series II	Sites with microliths	Sites with painted pottery
Shivna	Kanthar (1) Multanpura (2) Mahadeo-Ghat (Mandasor) (3) Smasan-Ghat (Mandasor) (4) Dhikola (5) Chikla (6) Nahargarh (7) Alvi-Mahadeo (8) Itali (9)	Kharki-Mata(11) Khanpura (Mandasor) (12) Suara (14) Borkheri (15)	Ram-Ghat (Mandasor) (47) Alvi-Mahadeo (48)	
Ghambal	Basai (10)	Basai (16) Narsinga (29)	Parmar-Kheri (25)	Parmar-Kheri (23) Nagda (24) Tungni (26) Metwas (27) Takraoda (28) Maori (30) Ghata-BUod (49) Betnia (50) Pseva (Pewa) (51)
Gambhiri	Morwan (17) Ratanzana (18) Kalyanpura (19) Chittorgarh (20)			
Bagh	Bagh Caves (38)			
Narmada	Navda Toli (41) Maheswar (43) Mandaleswar (45)	Choli (44)		Kasrawad (42)
Retam		Sanjit (13)		
Sipra				Khera (33)
Kali Sind (Bari)		Sonkatch (46)		
			Deoguraria (35) Patalpani (36) Kalikund (37)	Lohari (21) Dhodhar (22) Badnawar (31) Kanwan (32) Bilawadi (34) Dhar (39) Ashta (40)

The exploration of the river-valleys within parts of Malwa and its western periphery by Shri A. P. Khatri of the Deccan College Post-graduate and Research Institute led to the collection of a large amount of Stone Age and chalcolithic material from a number of sites, some of them already known and others freshly discovered. The work was mostly concentrated in the regions of Indore, Dhar, Maheswar, Dewas, Nagda, Ratlam, Jaora, Mandasor, Jawad and Chittorgarh.

The Shivna river was surveyed completely from its source at Partabgarh down to its confluence with the Chambal at Alvi-Mahadeo. Palaeoliths of Series I (pl. V) and II were found loose as well as *in situ* in well-preserved sections at several places, the most important of them being Mandasor, whence five hundred tools of Series II and fifty microliths were collected. A factory-site of Series II tools was found at Kharki-Mata near Mandasor. The raw material for Series I implements, Acheulian in nature, was Rewa sandstone, dolerite and, occasionally, jasper and that for Series II consistently jasper.

Apart from palaeoliths, several sites with microliths and painted pottery, presumably of chalcolithic association, were found. One of the sites of the latter category, Bilawadi (pl. VI A), 3 miles north of Dewas, yielded on the surface polychrome sherds and terracotta figurines (pl. VI B and C).

The adjoining table (p. 10) gives the names of the sites of the different categories. The number against each refers to the corresponding number on the map (fig. 4) showing the location of the sites.

EXPLORATION IN THE TAPTI VALLEY.—Dr. S. B. Deo and Shri Z. D. Ansari of the Deccan College examined the sections of the Tapti at several places along a distance of nearly 20 miles between Prakashe (Prakash) on the east and Kukarmude on the west in West Khandesh District (fig. 5).

Of a total collection of eight hundred palaeoliths, a vast majority was from the surface and a large number rolled. Stratified deposits were, however, noticed at Prakashe and at a site opposite Pimplas, where tools occurred in a coarse gravel capped by a 30-ft. thick deposit of silt.

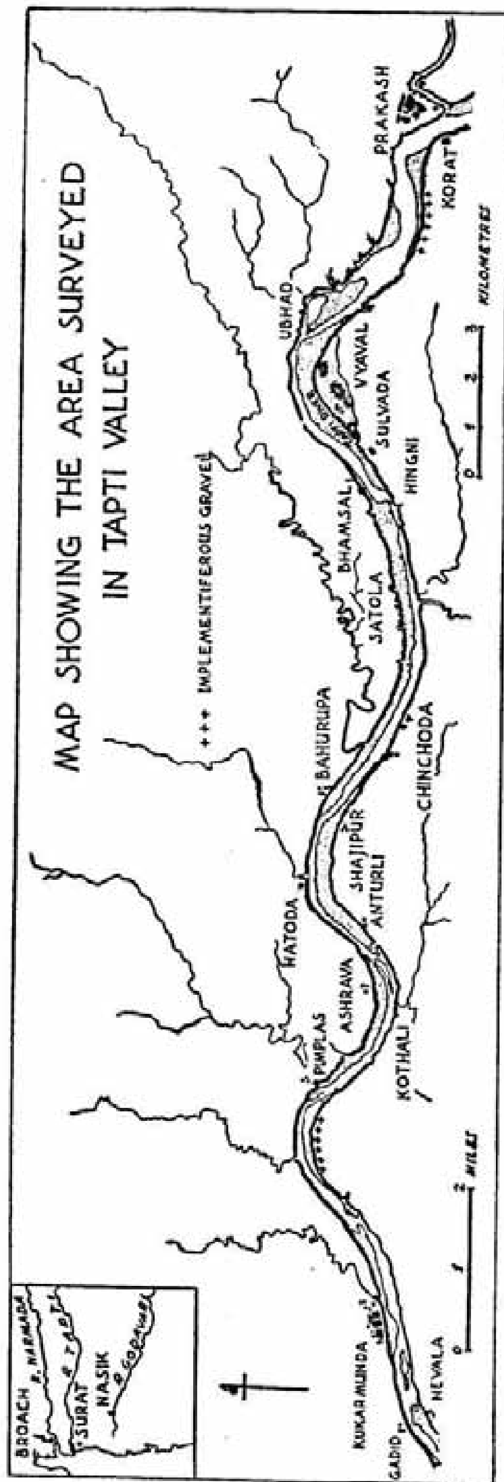
Most of the tools (fig. 6) were side, end, hollow and round scrapers, but, as in Nevasa and Bagalkot Series II, there were points on thick or thin flakes and cores, some having an incipient tang for hafting. The material was jasper, agate and, less frequently, chalcedony.

EXPLORATION IN THE UPPER GODAVARI VALLEY.—Shri P. V. Sovani of the Deccan College examined a 16-mile stretch of the Godavari valley with Nasik as the centre, from Gangapur Dam site to Eklahre (fig. 5).

Only one site in the river-section, near Gangapur, yielded palaeoliths of Series I in the coarse pebbly conglomerate loosely cemented by gravelly matrix and separated from the river-bed (from bottom upwards) by the bed-rock, a compact gravel-bed and a fine yellow silt. The tools lay in the upper part of the conglomerate near its junction with the overlying upper gravel, which also contained two or three tools and was in turn capped by a silt passing into the Black Cotton Soil.

The implements, twelve in number, included three handaxes, one of them an ovate, and two cleavers, the rest being flakes. The discovery of advanced handaxes, stratigraphically comparable with their counterparts at Nevasa *(1955-56,* p. 8), is noteworthy.

EXPLORATION IN DISTRICT MIRZAPUR.—The University of Allahabad, under Shri G. R. Sharma, undertook an exploration in the Vindhyan region in the tract lying between the Vindhyan hills and the Kaimur ranges north of the Son, covering the hill-ranges and


MAP SHOWING THE AREA SURVEYED
IN TAPTI VALLEY
+++ IMPLEMENTIFEROUS GRAVEL
BROACH
R. NARMADA
R. TAPTI
SURAT
NASIK
R. GODAVARI
KUKAR MUNDA
GADID
NEVALA
PIMPLAS
ASHRAVA
HATODA
KOTHALI
SHAJIPUR
ANTURLI
BAHURUPA
CHINCHODA
SATOLA
BHAMSAL
HINGNI
SULVADA
VYAVAL
UBHAD
KORAT
PRAKASH
MILES
KILOMETRES

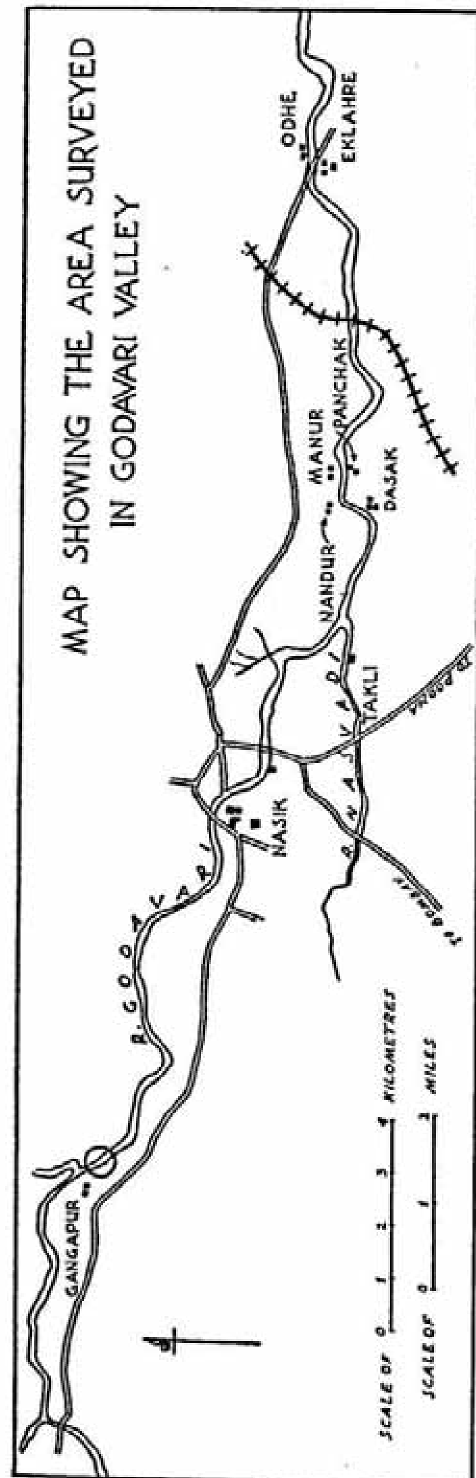

MAP SHOWING THE AREA SURVEYED
IN GODAVARI VALLEY
GANGAPUR
R. GODAVARI
NASIK
TAKLI
NANDUR
MANUR
DASAK
PANCHAK
ODHE
EKLAHRE
SCALE OF KILOMETRES
SCALE OF MILES

FIG. 5

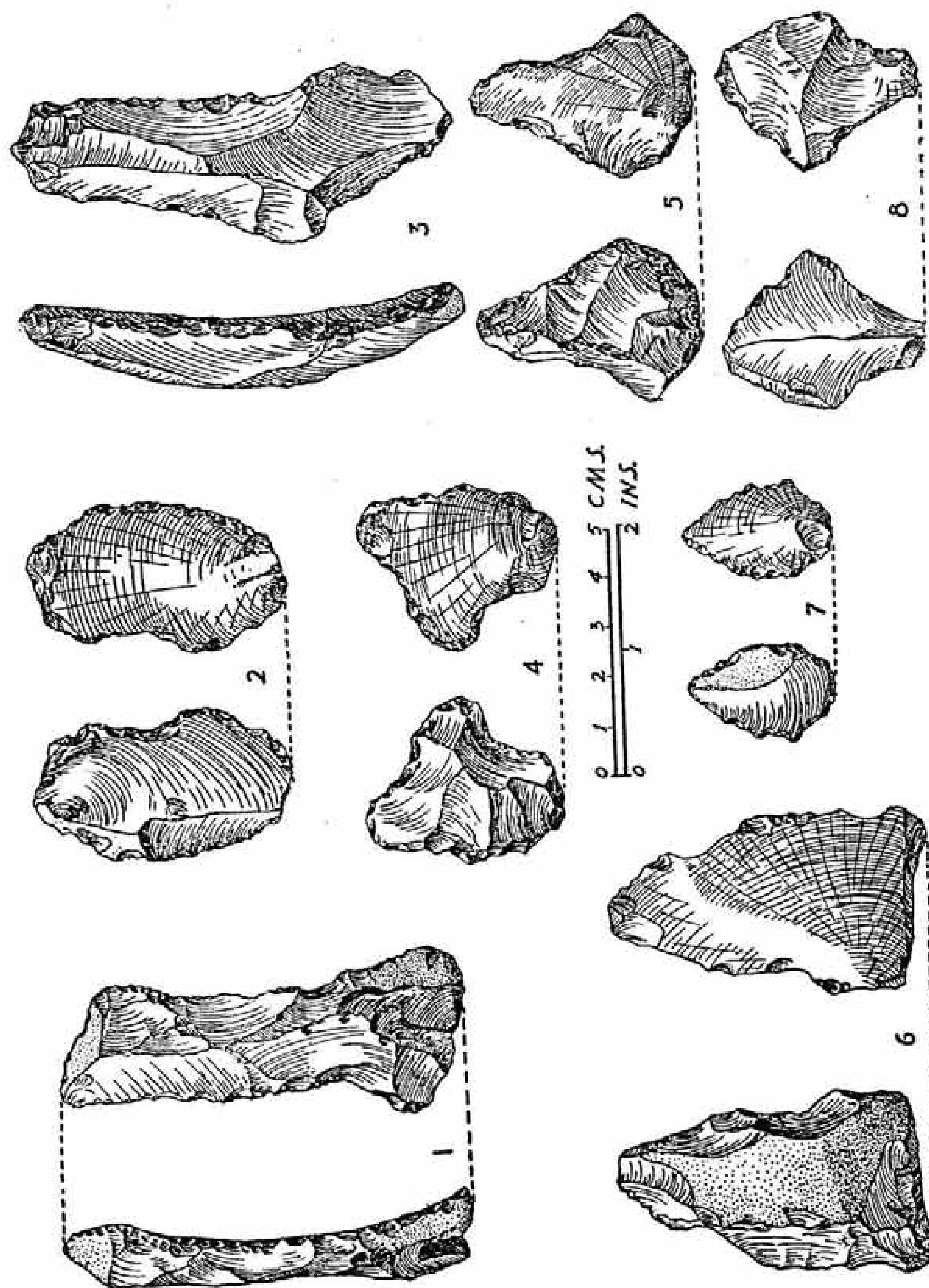


FIG. 6. *Tapti valley: palaeoliths of Series II*

the plateau-area, with the purpose of tracing the remains of Stone Age man in the region, rediscovering the painted rock-shelters reported upon over seventy years back by James Cockburn and discovering, if possible, new rock-shelters and caves. This threefold purpose was amply fulfilled. Among the sites visited, mention may be made of the following.

Of Barkacha and Kotwa, respectively 8 and 10 miles from Mirzapur, on the Mirzapur-Robertsganj road, the former yielded a large number of microlithic tools and the latter a core.

Ronp, 3 miles south-east of Robertsganj, proved to be very rich in microliths and its rock-shelters, visited by Cockburn, equally rich in paintings of different periods, sometimes superimposed on each other. The subjects were varied and ranged from hunting scenes to men, animals, symbols, designs, etc (pi. VII). Some of the shelters yielded microliths on their floors.

The hanging rock of the roof of a shelter near Basauli was found to contain paintings depicting porcupines and human figures. From the area were recovered seemingly Upper Palaeolithic and microlithic tools, along with fossilized bones.

At Dhobaha, between Basauli and Kandakot, a few microlithic cores were collected from within the alluvium directly resting on the sandstone-bed.

Immediately to the north of Kandakot, on the northern bank of a nullah, scrapers and burins were found embedded in the laterite. On the northern side of the Kandakot hill some palaeoliths were discovered. One of the rock-shelters contained scenes, painted in two different stages and depicting, among other subjects, a group-dance of four persons, two of them masked, hunting of an elephant by three persons with lance and bow-and-arrow, hunting of a deer and the dance of a person with dishevelled hair. Another rock-shelter had war-scenes of a fairly late period.

Lekhania, near Rajpur (which is distinct from the place of the same name near Ahraura reported upon previously), had a large number of rock-shelters and caves with

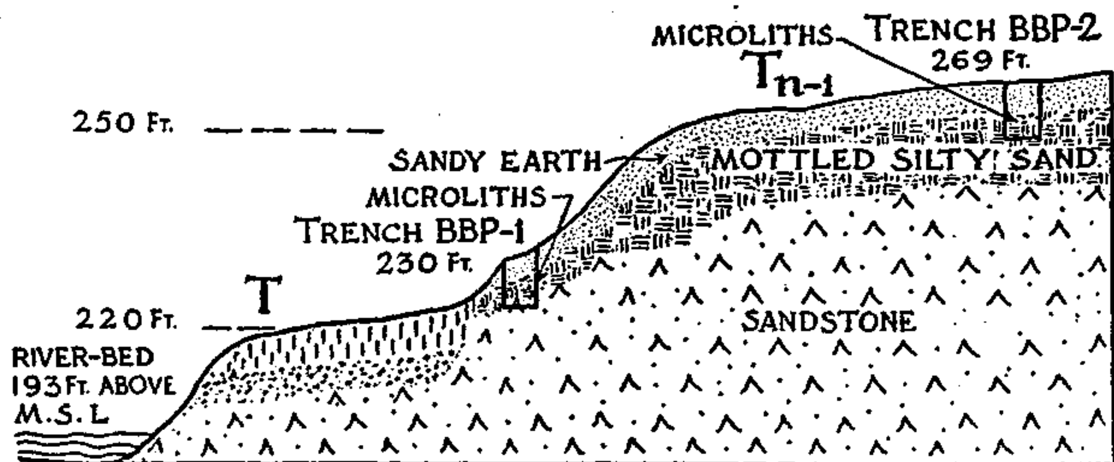


FIG. 7

implementiferous floor-deposits and wall-paintings. The tools were of the usual Upper Palaeolithic-cum-microlithic order (pi. VIII). The earlier paintings, particularly of the animals, including the rhinoceros, were full of natural likeness and vigour.

EXCAVATION AT BIRBHANPUR, DISTRICT BURDWAN.—Renewed excavation by Shri B. B. Lai at a microlithic site at Birbhanpur, near Durgapur in the Damodar valley in West Bengal, in continuation of previous work *(1953-54,* p. 6), confirmed that the microlithic industry was not associated with any kind of pottery and might, therefore, be taken to belong to a pre-pottery culture. It was further revealed that the industry belonged to the penultimate terrace, provisionally numbered Tn—1, of the Damodar river and that it was sealed by a 3-ft. thick deposit of sandy earth, which has since weathered (fig. 7). The tools included blades, lunates, points, borers, burins and scrapers, triangles and trapezes being absent. All these features point towards a high antiquity for the industry.

EXCAVATION AT LOTHAL (SARAGWALA), DISTRICT AHMADABAD.—The Western Circle, under Shri S. R. Rao, resumed the excavation at Lothal with a view to ascertaining the extent and purpose of the platforms (pl. XII B) exposed last year *(1955-56,* p. 6) and identifying the different structural phases.

Excavation revealed six successive Periods, in all of which, except the first, platforms of mud-bricks or clay fillings (pl. IX) had been erected to provide a high level for the houses constructed over them. Each Period saw the heightening of the platforms of the preceding one and the erection of new ones to save the houses from flood. The platforms were sometimes provided with burnt-brick veneers for protection against water-action. In one case steps were found leading from a platform of Period IV to a house built on a platform of Period V.

Situated on a low plain between the Bhogavo and Sabarmati, Lothal must have been subjected to periodical sheet-floodings. The fact that it was nevertheless not abandoned even after the first floods that it experienced perhaps points to its importance as a port-town for the rich cotton-growing hinterland.

The structures were built mostly of mud-bricks and occasionally of burnt bricks, the more important of them being a row of houses (pl. X A), a group of bath-rooms interconnected by drains and two blocks of houses and a lane in between with a brick pavement sloping on either side (pl. X B). The regular alignment of houses and drains (pl. XI), both public and private, bespoke a systematic town-planning. Most of the houses contained oblong or circular enclosures of mud-bricks or burnt bricks (pl. XII A), containing ashes and, sometimes, beads, triangular terracotta pieces and, in one case, charred animal-bones and a gold pendant, besides pots.

The pottery included the typical well-burnt red-slipped ware of finely-levigated clay bearing various painted designs in black colour. Generally, the painted designs on the red-slipped ware (pl. XIII) were naturalistic motifs, such as the palm-tree, *pipal-leaf,* corn-chaff, twig, creeper, floral pattern, bird and fish.

The black-and-red ware, with various other comparable sheds of colour, probably the result of differential firing conditions, and the buff ware, the latter in a limited quantity, occurred throughout at all levels alongside the red ware. The persistent occurrence of the former, not reported from any other Harappa site, showed that it was an integral part of the culture at Lothal. This was further proved by the occurrence in this ware of the same shapes as in the red ware, such as the convex-sided bowl with an incurved or flared rim, miniature jar and handled saucepan.

Fourteen steatite seals, one copper seal and five terracotta sealings were found (pl. XIV), usually with the Indus script, besides the unicorn. Two seals depicted a bull

bending to drink water out of a vessel, another a composite animal-form with the face of a camel, the horns of an antelope, the beard of a goat and the body of a bull and yet another a bird with a fish in its mouth.

The personal ornaments (pl. XV A, C and D) comprised beads of gold, steatite, faience, agate, carnelian, shell and terracotta, besides ear-rings, nose-rings and pendants of gold. The minuteness of the gold beads, which were meant to be strung together as a necklace with spacers and semi-circular end-beads, was remarkable for the goldsmith's skill.

The main tools and weapons represented were needles, pins, knives, fish-hooks, an arrow-head, a spear-head, a celt and axes made of copper or bronze (pl. XVI A). Also of copper were a female dancing figure and an animal, tentatively identified as dog.

The other excavated objects included terracotta animal and human figurines (pi. XV B) and gamesmen, points of bone and ivory serving as needles or styluses (pl. XVI B), weights of chert and miniature earthen vessels.

EXCAVATION AT PRABHAS PATAN, DISTRICT SORATH.-The Department of Archaeology, Government of Bombay, continued, under Shri P. P. Pandya, the excavation at Prabhas Patan, Somnath *(1955-56,* p. 7), on a larger scale, opening up four mounds and thus obtaining further evidence about the culture-sequence in the area.

Of the six Periods identified this year, the first and last, viz. Periods I and VI, dated prior and posterior respectively to the initial and the ultimate Periods observed here in the previous season.

Period I had two Sub-periods, of which the first, A, was represented by a single stratum of sand and gravel containing small quantities of crude sherds differently slipped in grey or red. The shapes and incised patterns, wherever they occurred, agreed with the shapes and painted patterns on the late Harappan pottery in Gujarat. The Sub-period was further associated with a microlithic blade-industry of the chalcolithic facies and segmented faience beads.

Period IB marked the appearance of painted pottery in profuse quantities (pl. XVII). The shapes and painted patterns comprised two distinct traditions—the one represented by the late Harappan ceramics of Gujarat consisting of the dish-on-stand, saucepan-handle, etc., and the other by the round bowl with an incurved and bevelled rim, distinctively painted with panelled patterns somewhat similar to the motifs on the chalcolithic painted pottery of central India. A commingling of the two was, therefore, indicated, resulting in hybrids: though the late Harappan shapes and patterns dominated the ceramics, the patterns of the other tradition were often found overlapping the former. Further, a few sherds with paintings in brown on a white or creamy slip suggested some resemblance with the material found in the lower levels at Ahar.

Period II again had two Sub-periods, of which the earlier was represented by the lustrous red ware in the form of the carinated bowl, dish-on-stand and saucepan-handle, which, together with some painted designs, showed their derivation from the late Harappa. The other decorative motifs were more sophisticated and included loops with hatched diamonds, hatched columns with volutes, etc. Two sherds were painted with the antelope. The pottery tended to be heavy. The only structure of the Sub-period was a rubble pavement.

A progressive decline in the lustrous red ware, signified by the dwindling of the carinated bowl and the simplification of decorative motifs to horizontal bands only, finally resulting in the emergence of a plain red-slipped ware, marked the second Sub-period. There was an increasing tendency for graffiti. Microlithic blades occurred in small quantities. The Sub-period was separated from the preceding one by a rubble pavement.

Period III, with its four Sub-periods, was sharply differentiated from the preceding one by the use of iron and the black-and-red ware in large quantities, represented by the rounded and carinated bowl and dish, which, however, gradually degenerated towards the end of the Period into a thick and gritty ware of poor finish. The associated pottery included the pot with a high and ledged neck, basin with loop-handles and bowl with an everted rim, with a characteristic slip in varied tones of cream, grey and brown. The Northern Black Polished Ware made its appearance in the second Sub-period. Ivory hair-pins and plaques resembling female figures, beads and ear-studs of semi-precious stones (pl. XVIII), a pulley-shaped jasper ear-stud having a gold plate with a repousse pattern and a flesh-rubber inscribed with characters of the second century B.C. were among the notable finds of the Period. Rubble pavements with post-holes were encountered at all levels.

In Period IV the black-and-red ware completely disappeared, but the gritty ware of Period III continued. Ivory and bone points, iron spear-heads and arrow-heads, terracotta gamesmen and beads, including one of gold, constituted the main bulk of other small finds. A rubble pavement occurred.

Period V was heralded by the well-known Red Polished Ware in all its typical forms. A unique spouted vessel with a loop-handle, painted, polished and moulded after the shape perhaps of a cow, was noteworthy. The associated finds consisted of finely-moulded terracotta human and animal figurines, carved shell bangles, ear-studs, beads, including areca-nut ones of terracotta, and Kshatrapa and Gupta coins.

The mounds were abandoned thereafter, except one which was re-utilized in medieval times for a temple, representing Period VI.

EXCAVATION AT BAHAL, DISTRICT EAST KHANDESH.—The South-western Circle, under Shri M. N. Deshpande, resumed the excavation at Bahal, on the Girna river, in continuation of the earlier trial-excavation done in 1952, which had established the chalcolithic nature of its earliest levels. The present excavation was undertaken with a view to obtaining a fuller picture of the chalcolithic culture and of connecting it with other phases of the culture as revealed at several sites in recent years.

Excavation brought to light five Periods with breaks between Periods I and II and again between III and IV.

Period I had two Sub-periods, A and B, both chalcolithic. Sub-period A was distinguished by a thick grey ware in the shapes of the globular jar with a flared rim, reminiscent of the Brahmagiri urn, bowl with a flat base and incurved rim and hand-made storage-jar with incised oblique and criss-cross lines or dot-and-chain patterns and with applique decorations of finger-tips and female figurines. There were also a few sherds of thinner grey ware with painting in red ochre on the rim-portion of the pot or on the knob of the lid shaped like a shallow bowl.

Sub-period IB brought with it a fine red ware turned on the fast wheel. It was painted in black with a rich variety of designs (pl. XX A).—horizontal bands with hatched diamonds, triangles, ladders, concentric circles and criss-cross, parallel and wavy lines in between, foliage and, rarely, animals such as the antelope and horse (?). A few sherds of a lustrous red-slipped ware recalled the post-Harappan lustrous red ware of Rangpur. The carinated bowl and spouted vessel of the Nasik-Jorwe type occurred in the upper levels of the Sub-period. Side by side were a few sherds of a burnished grey ware and black ware with oblique lines painted in white. The other finds consisted of beads of terracotta, shell and paste (pl. XXI A), microliths of chalcedony, agate and jasper (pl. XX B)—mostly parallel-sided blades, sometimes serrated, and, less frequently, lunates and trapezes—and

terracotta combs (pl. XXI B) and hones. The limited use of copper was indicated by a shapeless lump of the metal.

Period II *(circa* 600 to 300 B.C.) marked a complete change in the life of the site with the emergence of iron and of the black-and-red ware produced by the inverted-firing technique, with its variants in which the red was replaced by buff or cream. The ware had a highly-burnished surface, and the rimless bowl and shallow dish were the common shapes represented in it. The shapes in the associated red ware of gritty core were the globular jar and carinated *handi.* In addition, there were highly-polished faceted beads of carnelian, jasper, crystal and opal (pl. XXI A) and ear-ornaments of agate with a mirror-like polish. The iron objects represented spear-heads, arrow-heads, knives, daggers, sickles, etc.

Structurally, the Period had three Sub-periods indicated by post-holes at short intervals at as many different levels. Legged querns and pestles, of which a large number were found, and charred grains, probably rice and millet, pointed limitedly to the food-habits of the contemporary people.

Period III *(circa* 300 B.C. to A.D. 100) had two Sub-periods. In Sub-period A, the variants of the black-and-red ware, abundant in the preceding Period, disappeared, but the main ware continued alongside a gritty red-slipped ware with crackled surface, occasionally marked with graffiti, and the Northern Black Polished Ware. Beads of agate, carnelian and crystal (pl. XXI A) and bangles of shell were also found. A floor made of rammed pebble with post-holes (pl. XIX) was the only structural relic

Sub-period B was characterized by a still more gritty red ware. While the technique of burnishing deteriorated in the local ware, the Red Polished Ware made its appearance. There were etched beads of carnelian (pl. XXI A). Two-holed tiles were common to both the Sub-periods.

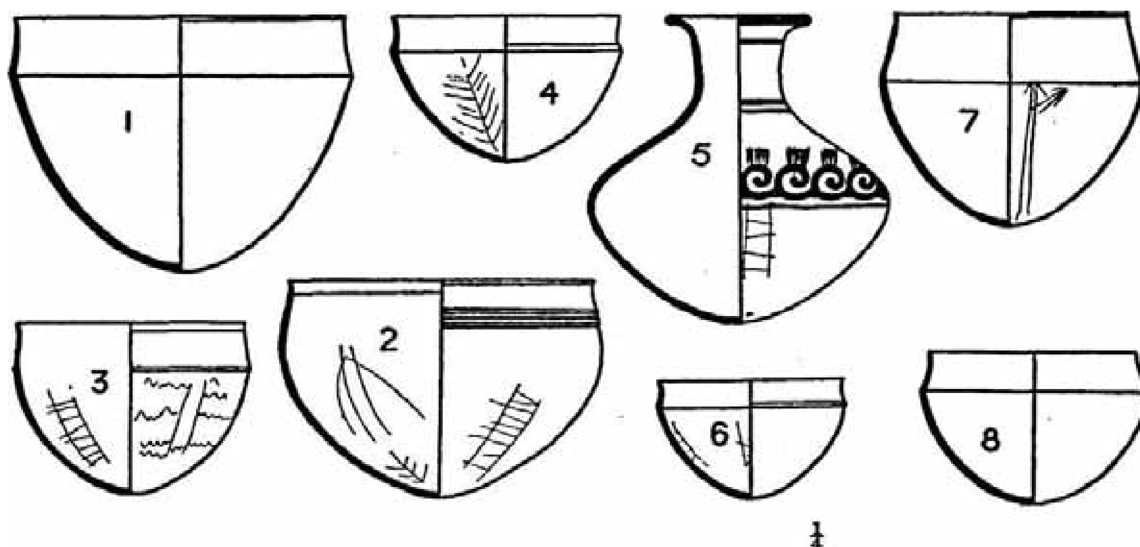
With the end of Period III, the site was subjected to severe floods which left behind sterile deposits of river-sand in several bands. After a long gap of twelve hundred years the site was re-occupied, in Period IV, during the Yadava and Muslim times (A.D. 1300 to 1700). The deposits of the Period were, however, found badly disturbed by pits of the subsequent Period. The pottery was crude and grey and red in colour, but the Mughul glazed ware and Chinese celadon ware, together with the polychrome Bahmani bangles and stray coins, were sufficient to date the Period.

Period V represented an occupation of the site during the hegemony of the Marathas in the eighteenth century. Remains of pottery conduit-pipes embedded in brickwork formed the main relics of the Period.

EXCAVATION AT TEKWADA, DISTRICT EAST KHANDESH.—Shri M. N. Deshpande's excavation at Tekwada, opposite Bahal across the Girna, brought to light four burials (pl. XXII) related to Period IB of Bahal. Out of them, three were urn-burials laid in the natural Black Cotton Soil and the fourth, a pit-burial, cut deep into the underlying yellowish clay. One of the first group was found disturbed and robbed; the other two each consisted of a large thick jar covered by a large bowl and containing a few bones, presumably of children, and respectively two and five bowls of black-and-red colour, some with graffiti (fig. 8). In one of the jars were also found a few beads of paste, a spherical bead of carnelian and a circular tabular bead of steatite.

The pit-burial contained the skeleton of an adult, 5 ft. 2 in. long, laid in north-south direction, with two pots, one of fine grey ware and the other of painted black-and-red ware, near its feet. These pots, together with a globular vessel of red-slipped ware bearing paintings in black curvilinear lines forming a shell-pattern and joined together by a band

and with six oblique strokes at the top of each curved loop (fig. 8), pointed indubitably to the contemporaneity of the burials with Period IB of the chalcolithic culture of Bahal.



EXCAVATION AT SONEPUR, DISTRICT GAYA.—The K. P. Jayaswal Research Institute excavated, under Shri Vijayakanta Mishra, a mound at Sonepur, 3 miles west of Bela railway-station, on the bank of the Jamunai river. Excavation revealed five successive Periods (pl. XXIII), represented by an accumulation of 10 ft. overlying a sandy deposit of about the same thickness above the compact natural soil.

The pottery of Period I, limited in quantity, consisted of the bowl, dish and vase in coarse black-and-red ware—this being the first reported occurrence of the ware in the region. The only other object from the Period was a crude sandstone bead.

Black-and-red ware continued in Period II (pl. XXIV), the latest phase of which was also marked by the occurrence of a few sherds of fine grey ware and the Northern Black Polished Ware. The other objects included bone points or styluses and a copper antimony-rod.

Period III was characterized by the N. B. P. Ware in the fullness of its evolution, with golden and silvery finish, and the wares found associated with it at other sites, besides a red ware of fine fabric, sometimes painted with deep-red or black bands, and the black-and-red ware which persisted. Beads of terracotta, glass, ivory and stone, a steatite weight, terracotta figurines of *nagas* (pl. XXV A) and other animal figurines with punched, stamped or notched circlets and nails, blades, etc., of iron constituted the other finds. A few polished stone celts of the neolithic order (pl. XXV B) from the levels of this Period were probable examples of a re-use of earlier material. A number of pottery ovens and faint traces of mud-walls were in evidence.

Period IV, though essentially a continuation of the preceding one, was marked by a deterioration in the quality of the black-and-red ware and a tendency towards thickness in the N. B P. Ware. The usual shapes in the latter were the dish, lipped bowl and cup. The associated objects included beads of terracotta, mostly of the shape of areca-nut, glass and stone, bangles of terracotta and stone, terracotta figurines of *nagas* and other animals similar to those in Period III, points or styluses of bone, flesh-rubbers of terracotta

and stone celts. No brick structures were met with, but there were a floor plastered with lime and two terracotta ring-wells, the latter used for the soakage of refuse-water.

Brick structures made their appearance in Period V, the average size of the bricks being 21 X11½ X 3 in. The ceramics of the Period were a red ware of medium fabric. The other finds were punch-marked and cast coins, beads and ear-ornaments of terracotta, bangles of stone and terracotta, sealings of terracotta with symbols occurring on punch-marked and cast coins or with defaced legends, a terracotta bull with a medallion on its strap and copper antimony-rods. Stone celts were also found.

On the basis of the present framework of early Indian chronology, Periods I and II would probably date back to earlier than 600 B.C. and Period V would come down to 50 B.C.

EXCAVATION AT UJJAIN.—The Excavations Branch, under Shri N. R. Banerjee, resumed the excavation at Ujjain with a view to establishing the sequence of cultures in the Garh-Kalika mound, representing the ancient Ujjayini, on the northern outskirts of the city of Ujjain in Madhya Pradesh, and tracing the outlines of the mud-rampart brought to view last year *(1955-56,* p. 19).

The excavation revealed a continuity of occupation on the site from a date prior to 600 B.C. to the beginning of Muslim rule in Malwa in the fourteenth century, divided into four successive Periods, I to IV, in a deposit ranging from 35 to 40 ft. (figs. 10 and 11).

The salient features of this year's excavation were the discovery of the outlines and constructional details of the massive rampart with a moat, dating back to the earliest period of occupation on the site and the find of a sherd of the Painted Grey Ware in the core of the rampart.

The rampart, as superficially observed, encloses an area measuring approximately 1 X¾ mile, with a basal width of a little over 200 ft. and maximum extant height of 42 ft. The contours of the area occupied by the rampart show several openings of varying dimensions suggesting gateways (fig. 9), but further work is called for to establish their existence.

The rampart (pl. XXVI) was built in Period I by the dumping of dug-up yellow and black clays to form a thick wall with a gentle slope on the inner side and a less-pronounced one on the exterior. As originally planned, it was surrounded on the west and, distantly, on the north by the river Sipra, while a moat, exposed by excavation on the eastern side and found to be filled with greenish water-borne silt, added to it a line of defence in that direction and, presumably, on the south side as well, being apparently connected with the river and thus completing the circuit of a water-barrier. The moat was found to have been at least 80 ft. wide and 22 ft. deep during its functional life. A skull and bones of a bovine animal, which was possibly drowned and caught in the slush, and a piece of rope were found in the lower levels of the moat-filling (pl. XXVII A and B).

The fortification on the river-side was breached by floods on at least three occasions during Period II. After the first breach, it was repaired by the construction of a 15-ft. wide brick revetment over a raised level of the rampart (pl. XXVIII A). This revetment, damaged during the second erosion, was available in only eleven courses of bricks. The height of the rampart was raised for the second time by the massing of clay over the damaged remains of the revetment, but even after this the rampart was eroded for the third and last time. The floods were strong and expansive enough to affect some parts of the sheltered habitation-areas too, where they left vestiges in deposits of sand and silt. The rampart was also seen to have had a brick platform, now reduced to a mass of debris, over its toe (fig. 10; pl. XXVII C) towards the moat, to prevent scouring by water. The erosion on the southern side was much more severe than on the eastern side, for it was

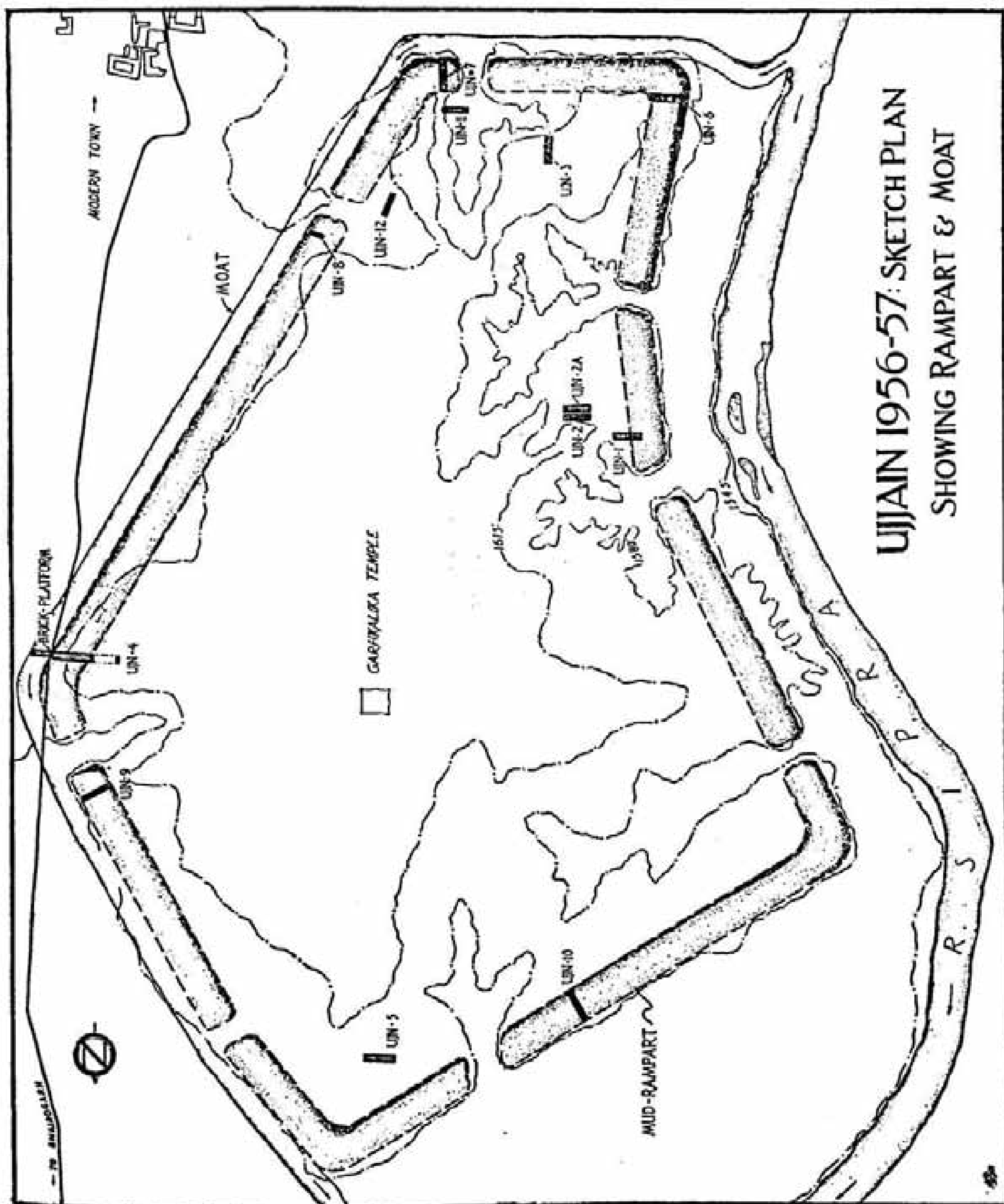


FIG. 9. *Approximate scale 1: 8,500*

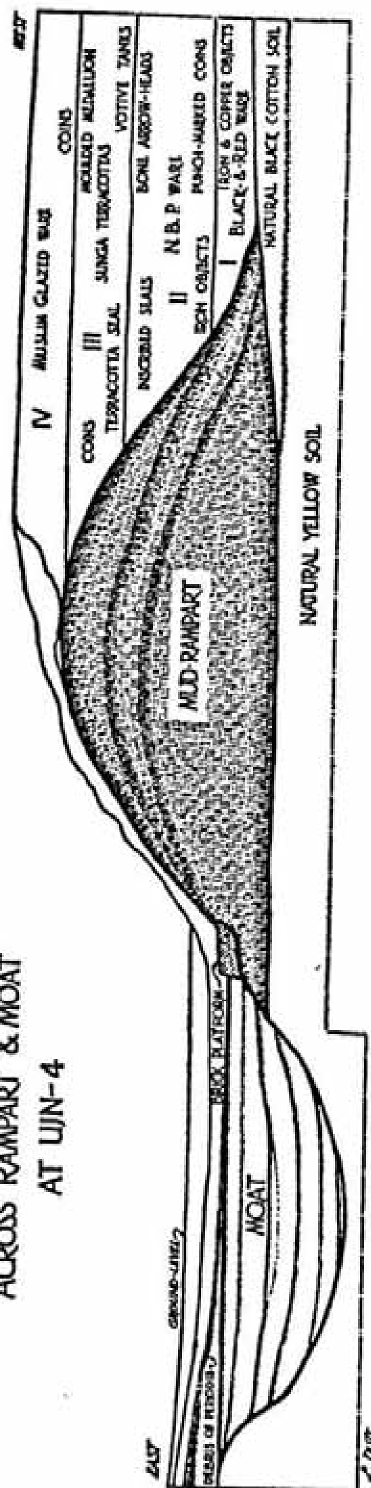

UJJAIN 1956-57: SCHEMATIC SECTION
ACROSS RAMPART & MOAT
AT UJN-4
WEST
EAST
IV
MUSLIM GLAZED WARE
COINS
III
TERRACOTTA SEAL
SUNGA TERRACOTTAS
MOULDED MEDALLION
VOTIVE TANKS
INSCRIBED SEALS
BONE ARROW-HEADS
II
N.B.P. WARE
IRON OBJECTS
PUNCH-MARKED COINS
I
IRON & COPPER OBJECTS
BLACK-&-RED WARE
NATURAL BLACK COTTON SOIL
MUD-RAMPART
NATURAL YELLOW SOIL
BRICK PLATFORM
MOAT

FIG. 10

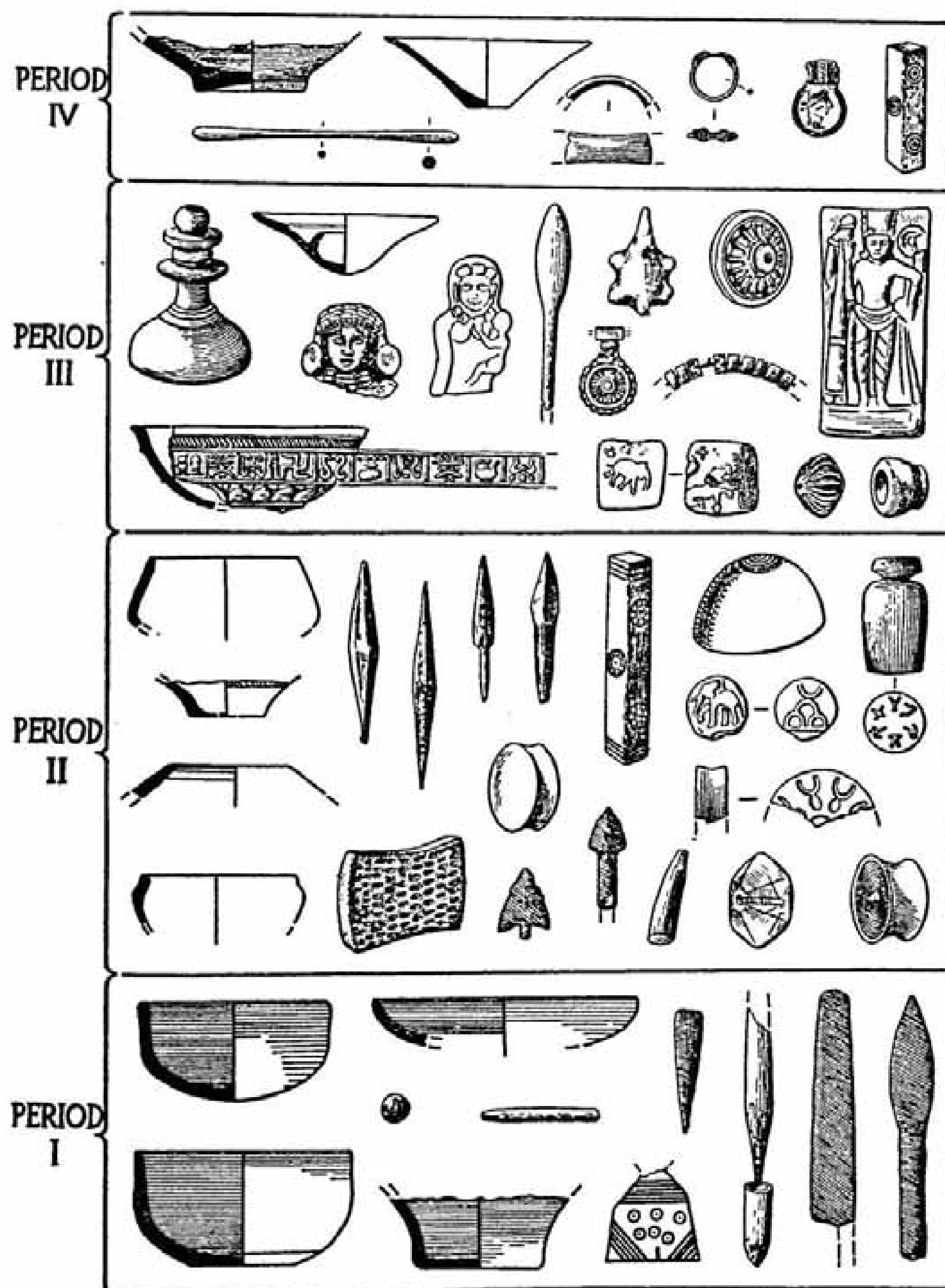


FIG. 11. *Ujjain: sequence of cultural equipments*

cut away by the strong current of river-water flowing through a channel apparently linked with the moat as its inlet. The present outline of the mound on the southern side is consequently close to the inner face of the defences (pl. XXIX A).

The rampart survived as a city-wall during the whole of Period III but ceased to be of utility during the last Period, IV.

The occurrence of a sherd of a Painted Grey Ware bowl, with a painted band around the rim both inside and outside (fig. 12), in the body of the rampart points to the existence of this early ceramic in the neighbourhood and adds a new site, the southernmost one, to the distribution-list of the Painted Grey Ware.

In the habitation-area, Period I was represented by the lowest strata, 6 ft. in height, and was characterized by stone and burnt-brick structures, arrow-heads of bone and iron and spear-heads of iron as weapons of war, besides choppers of iron as household-tools, lumps of copper suggestive of objects of indeterminate shape, a bone stylus and a socket for its working end and terracotta beads.

The ceramics of the Period consisted of a black-and-red ware, black-slipped ware, fine red-slipped ware with a secondary black slip, designated tentatively as the double-slipped ware, besides unslipped and red-slipped Vesiculated Ware (fig. 12), the last (the name being suggested by Sir Mortimer Wheeler) distinguished by minute grains or flakes embedded in the clay. The entire pottery, except for a few specimens of the Vesiculated Ware, was wheel-made. The shapes in the black and black-and-red wares consisted of the bowl and dish and those in the Vesiculated Ware mostly the jar with a flanged rim and carination at the waist, used for cooking. The only shape in the double-slipped ware was the convex-sided bowl with a vertical or inclined rim and a pronounced cordon below. The common shape in the unslipped ware was the bowl with an incurved and almost beaded rim.

Period II was one of prosperity, as indicated by objects of diverse variety, varied structures in different materials, coins in large numbers and evolved ceramics turned, but for very limited quantities of the Vesiculated Ware, entirely on the wheel, contained in 14-ft. thick strata.

The pottery of the Period was characterized by the well-known Northern Black Polished Ware (fig. 13) and its associated-Ceramics, such as the dish in a thick grey ware with a carination at the waist, the incurved bowl, occasionally with an externally bevelled rim, the elongated vase with a chamfered rim—all unslipped, the jar in various shapes and the collared basin—both in plain red ware—and the carinated and flange-rimmed jar in the Vesiculated Ware. The black-and-red and black-slipped wares continued in limited quantities and for a short time.

The N. B. P. Ware was found in large quantities and in a wide variety, ranging in colour from a golden or silvery finish to various shades of black. The Ware appears to have been locally manufactured, considering the find of large numbers of rather poor specimens, including those without slip on the interior. The occurrence of painted patterns in an orange- or saffron-coloured pigment on sherds of the Ware, including one bearing a black-painted band on the exterior and interior alike, deserves notice. One broken fragment was found rivetted with copper wire. The shapes consisted of the convex-sided bowl of varying profiles and rimless *handi,* the latter type occurring also in plain red and thick grey wares and the Vesiculated Ware.

The structures of the Period were made variously of mud, mud-bricks, stone rubble or burnt bricks (pl. XXIX B). The mud (pl. XXX A) and burnt-brick structures were usually built over a plinth of rubble and clay. The flooring too lay on a bed of rubble and was made either of clay, occasionally mixed with mud-bricks, or brick-jelly. The mortar and plaster, wherever available, were of a smooth paste of clay. The floors were renewed

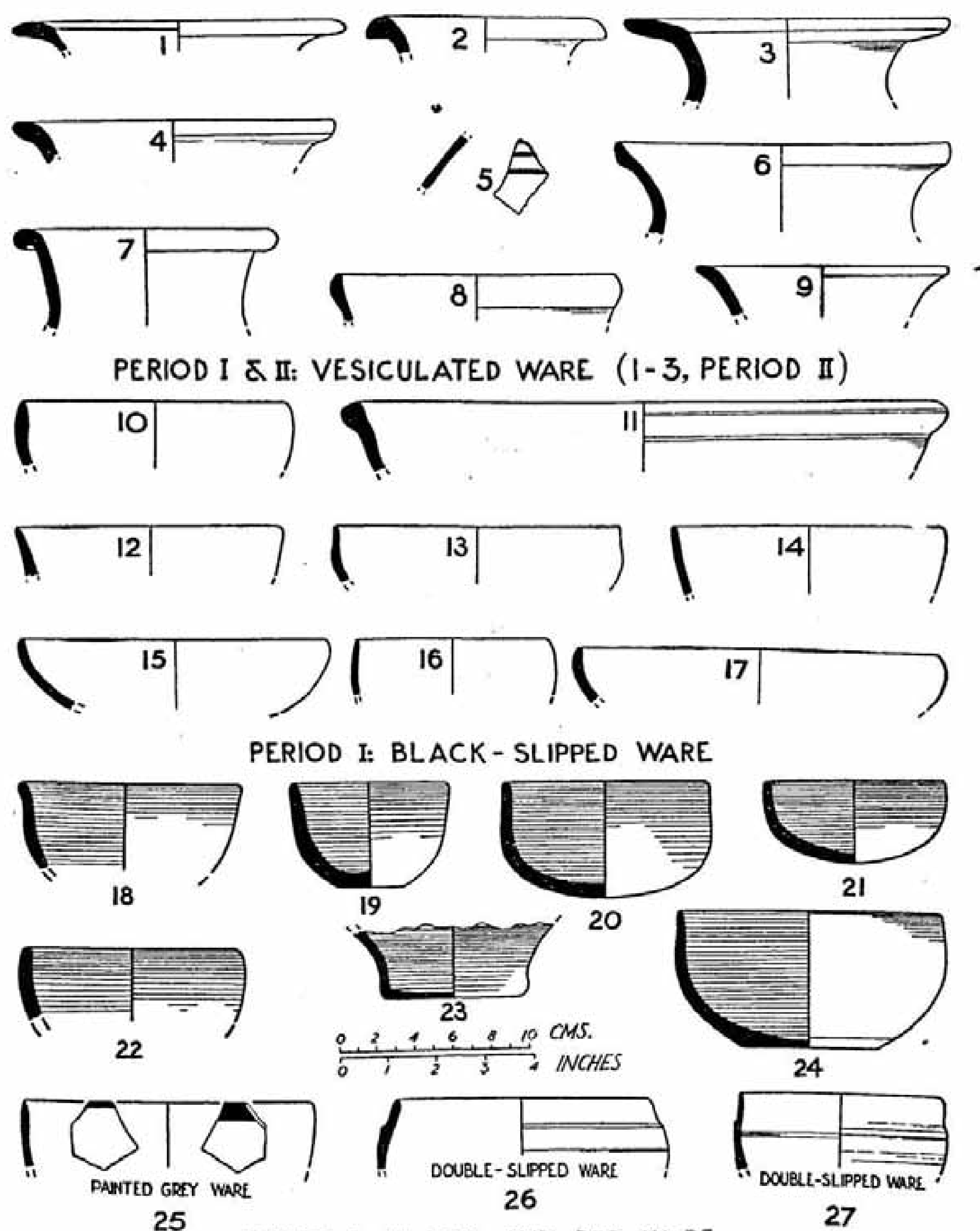


FIG. 12. *Ujjain: characteristic pottery-types, Periods I and II*

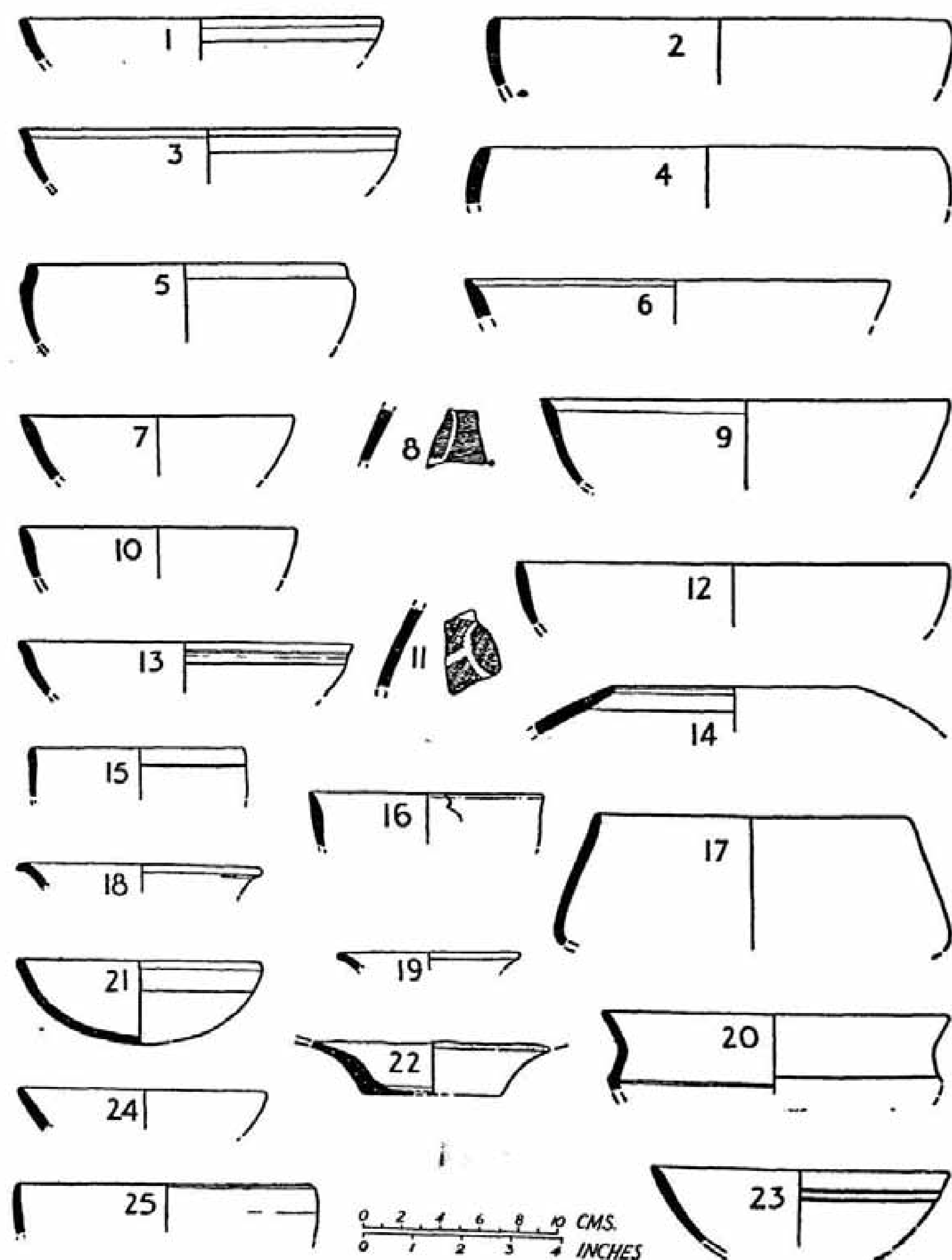


FIG. 13. *Ujjain: representative types of the Northern Black Polished Ware*

or raised periodically with clay. The use of lime bricks with a glazed surface was noticed, though no structure where they had been used was found. The houses appeared to have been roofed generally with oblong tiles with double perforations for being fixed in position.

The massive underground structure, built of large-sized bricks, 30 X 30 X 7 in. (pl. XXX *B)* partially exposed last year, was found to have been an oblong enclosure, measuring approximately 34 X 26 ft., with a low overground parapet-wall. Its use could not be determined, though it appeared to have served as a reservoir.

Several terracotta ring-wells were found in this and subsequent Periods (pl. XXXI A), but they were far less deep than a brick well of this Period (pl. XXVIII B), the bottom of which was not reached. This, together with the low level of water in the moat and the absence of any indication of rising water-tables m later periods, indicated that the ring-wells had not been used for water-supply but served as soakage-pits, the waters of which disappeared into the subsoil by percolation.

The roads of the Period were usually built of rubble of assorted size with a clay soling; occasionally black sticky clay was also used, as the semblance of a road through one of the openings across the defences would suggest.

Gamesmen of terracotta, dice of terracotta and ivory, pottery discs with single or double perforations or with none, rounded balls of stone and terracotta antimony-rods of copper and ivory, pigment-sticks, combs of ivory (pl. XXXIII A), bangles (pl. XXXIV A), plain and decorated, of terracotta, stone, shell, glass and copper beads of terracotta, ear-ornaments, in the form of discs of ivory, terracotta and highly-polished stone, ear-rings of copper and hair-pins of ivory represented the objects of games and amusement, toilet

Grinding stones, pestles and mortars, carinated cooking pots blackened by soot and simple clay-lined oval ovens indicated the kitchen-equipment.

A tile-roofed mud-house, found in a fallen and damaged state served as a workshop for the manufacture of beads of agate and arrow-heads and knitting needles of bone. Large quantities of unfinished agate beads of various shapes and sizes (pl. XXXIII B), chunks of bone serving as raw material and several finished pieces of bone arrow- heads and knitting needles, together with a few objects of iron, which possibly served as tools, were the remnants of a major industry found in the workshop. Elsewhere, bone arrow-heads were found together with a large number of spear-heads and arrow-heads of iron (pl.XXXV A). One of the bone arrow-heads was stained with the blood of a bird. Akin to the arrow-heads were knitting needles with a notched lower end. Awls of ivory, each with a bulbous handle and a pointed working end, were also found in the same levels. Two scals of ivory, inscribed in early Brahmi script attributable to the third-second century B.C., provided the upper limit of the chronological range of the Period. One of the scals read Gosahitakasa and the other, tentatively, Pattilasa. Period III was represented by 9-ft. thick strata and covered a rather long period from the times of the Sungas to those of the Paramaras. The actual sub-division into phases, corresponding to the pattern of historical sequence, will be determined after the completion of the study of coins and associated antiquities. The structures of the Period (pl. XXXI B) followed the earlier tradition of brick constructions over rubble plinths (pl. XXXII A). Terracotta soakage-wells, bottomless soakage-jars (pl. XXXII B) and terracotta pipe-drains (pl. XXXI A), laid underground, as well as brick drains represented the sanitary arrangements of the Period. One clay-lined channel-shaped oven, capable of taking a large number of vessels simultaneously suggested its use for mass-cooking.

Terracotta votive tanks (pl. XXXV B), in the shape of round dishes with lamps on the edges and oblong ones with a lamp in each corner and snakes and fish in the simulated waters of the tank, and terracotta figurines of mother-and-child, recalling a mother-goddess, pointed to the forms of popular worship.

The plastic art responding to the needs of religion, amusements or toiletry was represented by terracotta human (pl. XXXIV B) and animal figurines, such as mother-and-child, elaborately-decorated female figures in the round, tortoises, fish, elephants and horses with or without riders, bas-relief carvings on thin stone slabs, fragments of sculpture in sandstone and soapstone caskets with lids. Objects of ivory, in the form of combs, hair-pins, awls, armlets, stoppered bottles, etc., were common.

The entire pottery of the Period was wheel-turned, except the large soakage- or storage-jar, and was in a red ware of medium fabric treated mostly with a slip and limitedly with a wash or thin slip. The common shapes were the bowl with an incurved and internally-ledged rim with its variants in an unslipped ware, the ink-pot lid, the flange-rimmed lid-*cum*-bowl, the button-knobbed lid, the collared basin, the jar of various shapes and the sprinkler of rather poor finish. Some specimens were distinguished by stamped designs. One terracotta medallion or casket (pl. XXXIV C) bore the moulded form of a bullock-cart or chariot, and a moulded bowl had on the exterior a series of sacred symbols, including the *svastika, kalasa,* etc.

Period IV was represented by 10-ft. thick strata and marked the end of the Paramara rule and the beginnings of Muslim rule in Malwa. The site was obviously abandoned after a comparatively short-lived occupation during the Period, and the town shifted away from the confines of the fortified walls, which had ceased to be of any effective use. The upper strata were found disturbed by deep and large pits, dug presumably for the purpose of removing building materials for new constructions.

The Period was characterized by Muslim coins, soapstone beads, terracotta animal figurines, copper rings and a typical pottery consisting of a dull-red to red ware, in which were represented the unslipped mica-dusted vase and knife-edged bowl and the red-slipped finial-shaped lid, spouted vase, basin with a nail-head or obliquely cut rim, carinated cooking jar with a flanged rim and cooking pan with a loop-handle marked with patches of soot. There were, besides, a few sherds of dull and coarse grey ware and glazed sherds of indeterminate shape.

The structural remains were found mostly disturbed and in the form of debris.

EXCAVATION AT KAUSAMBI, DISTRICT ALLAHABAD.—The University of Allahabad, under Shri G. R. Sharma, continued the excavation at Kausambi *(1953-54,* p. 9; *1954-55,* p. 16; *1955-56,* p. 20), primarily to study the nature of the encircling rampart, 3½ miles in perimeter, provided at regular intervals with towers and bastions, and to complete the exposure of the Ghoshitarama area.

Excavation of a 65-ft. high tower (pl. XXXVI) in the eastern rampart revealed that initially the bastion, like the rampart itself, had been of mud. At the top of the bastion was erected a central tower, 38 X 11 ft., flanked by projecting platforms on the eastern and western sides and by guard-rooms on the other sides. In the second phase, the platforms were covered up, the tower widened and the rooms rebuilt. A further reconstruction of the rooms took place in the third phase. Next, in the fourth phase, the tower was extended southwards by 9 ft. 6 in., the evidence for a corresponding extension on the north being missing. The fifth and last phase witnessed an extensive alteration in the plan of the tower and associated structures: the side-rooms were rebuilt on new alignments and a platform encircling the tower on the west north and south added.

That the rampart and the first phase of the superstructure were earlier than the introduction of the North Black Polished Ware was indicated by the absence of that Ware in the corresponding levels. All the other phases belonged to a period when the Ware was in vogue, except the fifth, which post-dated it.

The excavation of the Ghoshitarama area yielded a complete figure of standing Buddha in local sandstone (pi. XXXVII A) and two sculptured balustrade-pillars of crimson sandstone. One of them had a vase with two sets of creepers with foliage, buds, blooming flowers and fruits issuing out of it and a graceful Gaja-Lakshmi at the top (pi. XXXVIII). The other bore on one side a Gaja-Lakshmi again and on the other panels of *tri-ratna,* a *stupa* in railing supporting a cluster of leaves with stalk and flower and a flanking pillar with a seated lion (pi. XXXVII B).

MISCELLANEOUS EXCAVATIONS IN UTTAR PRADESH.—The Department of Archaeology, Government of Uttar Pradesh, under Shri M. M. Nagar, conducted excavations at Jajmau, District Kanpur, Unchgaon and Baragaon, District Sitapur, Ashtabhuja near Mirzapur and Lakhneswar-dih, District Ballia. At Jajmau was found, apart from other objects, the Northern Black Polished Ware. Medieval brick temples at Unchgaon and Baragaon were completely cleared of their d6bris. At Ashtabhuja were discovered a large number of stone sculptures of the ninth-tenth century, of which the most important was an image of Sarasvati. The limited work at Lakhneswar-dih yielded the N. B. P. Ware, besides stone and terracotta objects.

EXCAVATION AT CHANDRAKETUGARH, DISTRICT 24-PARGANAS.—The University of Calcutta, under ShriK. G. Goswami, carried out a small-scale excavation at the mound of

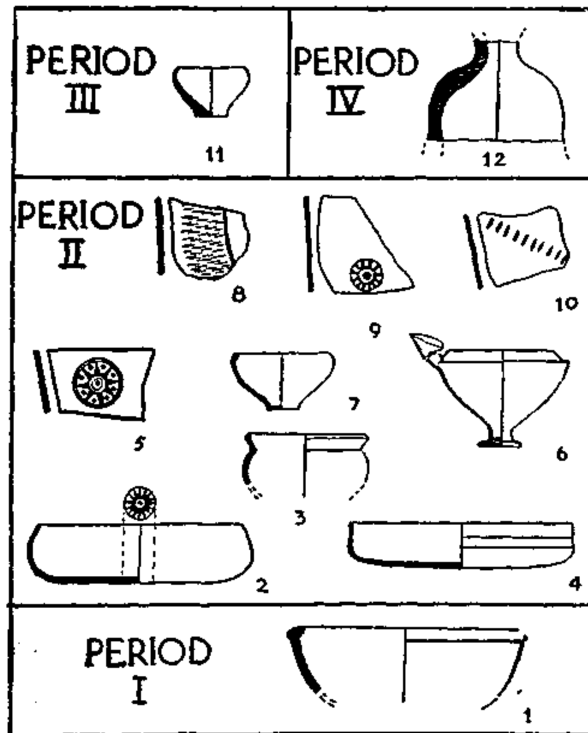


FIG. 14. *Chandraketugarh: pottery-types. Not to scale*

Chandraketugarh (Berachampa), situated at a distance of 23 miles to the north-east of Calcutta. The excavation revealed remains of a fortified township with five successive Periods, ranging possibly from the pre-Mauryan to Gupta times, each with its distinctive pottery (fig. 14). The remains of the pre-Gupta levels indicated that the structures had been of mud, bamboos and timber with tiles for the roof. An interesting but partly-exposed structure was a ramp of rammed concrete gradually sloping from east to west. Over it was subsequently erected a rampart of earth obtained from the neighbourhood, the core of which yielded cast copper coins and stamped potsherds (pl. XXXIX). A drain of pottery pipes fitted into each other was an interesting feature of Period II.

Period I (possibly pre-Mauryan) was characterized by the use of a red ware, often treated with a slip.

Period II (probably Maurya-Sunga) was marked by the advent of the Northern Black Polished Ware, black-slipped ware and polished and unpolished grey ware. The shapes in the N. B. P. Ware were the dish and cup, in the grey ware the dish, often with a stamp at the centre of the inner base (pl. XXXIX), and the trough and in the black ware the dish, also with a stamp, and bowl, a common type of which had a wide mouth, an incurved rim with a low cordon below a beak-like spout, a body tapering down to a flat base and a rouletted decoration on the exterior.

Period III (post-Sunga) was marked by the re-appearance of red ware, one sherd bearing a stamped design. Other finds included stone beads, antimony-rods of copper, cast copper coins and a piece of grey standstone recalling, by its polish, Mauryan workmanship.

Period IV (Kushan) yielded fragmentary but typical Kushan terracotta human figurines.

Period V (Gupta), with only a few relics, saw the introduction of burnt bricks.

EXCAVATION AT JAUGADA, DISTRICT GANJAM.—Well-known for a set of the Fourteen Rock-edicts of the Mauryan emperor Asoka, the fortified site of Jaugada (pl. XL), on the bank of the Rishikulya river in southern Orissa, was taken up for excavation by the Eastern Circle, under Shrimati D. Mitra, with a view to finding out its culture-sequence and the nature of its fortification. Five cuttings were made in different parts of the site and a trench laid across the defensive rampart.

A neolithic culture was found vaguely represented at the site by a few stone celts of oblong section (pl. XLIII A), all surface-finds, except one occurring immediately above the natural soil and seemingly associated with a black-and-red ware. Otherwise, the occupation may be broadly divided into two Periods.

Period I represented a full-fledged iron-using culture. The pottery, essentially plain and totally devoid of paintings, was utilitarian in character. Three distinct wares were recognizable: an ordinary dull-red ware of medium to coarse fabric, with or without slip; a black-and-red ware, mostly of fine and well-burnt fabric, often with a polished surface, the common shapes being the dish and bowl; and a red polished ware. Amongst other industries, special mention may be made of bead-making: a large number of beads (pl. XLV), made of shell, bone, carnelian, agate, crystal, quartz, etc., were remarkable for their workmanship. From the presence of unfinished beads it was clear that they had been manufactured locally. No brick structure was met with, though post-holes and patches of floorings, made of rammed gravel or burnt earth (pl. XLI A), were often encountered.

The principal ceramic industry of Period II was a red ware. Made of medium-grained clay, it was mostly underfired and had a tendency to rub off easily. The decoration consisted of incised and applied patterns (pl. XLIV A). The knobbed vessel

(pl. XLIV B), which made its appearance in Period I, survived in this Period as well, but the fabric degenerated considerably. The other cultural equipments included brick and stone structures (scantily represented in the limited area under excavation), fine specimens of beads (pl. XLV), mostly of semi-precious stones, shell and terracotta, and copper and iron objects of peace and war. A punch-marked coin (pl. XLIII C) was found in an early level of the Period. So-called Puri-Kushan coins (pl. XLIII B), eleven in all, were found scattered throughout.

The fortification round the town consisted of an earthen rampart, surviving to a height of 25 ft. at places. It was roughly square on plan, each side, pierced by two gateways, approximating half a mile in length.

The excavation of a trench, 117 ft. long, laid across the southern side of the rampart between its two gateways (pl. XLII), is in progress. The following conclusions, based on a preliminary examination of the material so far excavated, are to be regarded as provisional.

On the natural soil was a sandy layer with flimsy occupational d6bris, consisting of sherds of fine black-and-red ware. Over it was built the first defensive rampart, its extant maximum height being 14 ft. 6 in. and basal width 70 ft. The material to form the rampart was obtained by the cutting of a ditch into the sandy layer and the varied natural deposits of clayey earth with *kankar-nodules,* laterite-gravel and stone chips. Thus constituted, the rampart contained stray sherds of the same nature as the sandy layer. The inner bank of the ditch has been traced in the extreme outer end of the trench, but its width and depth have not been ascertained.

The next important phase of the rampart, separated from the initial one by an intermediate phase, during which the existing top was covered by a thick deposit of earth after some occupational layers had accumulated on the inner face, saw the construction of a 2-ft. high wall of rubble and stone chips with a cap of large boulders (pl. XLI B)—all laid in thick laterite-gravel and clay—against the inner side. Both the sides of the wall and the major part of its top were covered up with varied deposits, leaving only one side of the top boulders exposed. One of such deposits yielded a Puri-Kushan coin—the only indication of the date of the phase.

That the fortification did not cease to play its part in the later history of the town was indicated by its subsequent heightenings, the tops of which were found eroded.

No precise chronological limits can as yet be prescribed for the life of the town. Not to speak of the neoliths, the ceramic evidence indicates its pre-Christian origin. Further, the free occurrence of Puri-Kushan coins in the levels of Period II not only suggests an era of prosperity when these coins were in currency but also sets the upper limit of the Period.

EXCAVATION AT KUNNATTUR, DISTRICT CHINGLEPUT.—In continuation of last year's work *(1955-56,* p. 23), the Southern Circle of the Department, under Shri V. D. Krishnaswami and Shri Ballabh Saran, opened three megaliths and laid a trench at the foot of the hill, where surface-spoliations had revealed traces of ancient occupational deposits.

Three main types of megalithic burials (fig. 15), situated very close to one another on the northern slope of the Subrahmanyasvami hill, have so far been brought to light: Type I, cairn-circle, represented by Megaliths 1, 4 and 5; Type II, slab dolmenoid cist, represented by Megalith 2, which had a port-hole towards the west; and Type III, a new type, without large circle-stones, represented by Megaliths 3 and 7, each containing a legged terracotta sarcophagus laid into a pit along with some pottery and sealed by a capstone. Another megalith, Megalith 6, was found badly disturbed and, except for a few totally-damaged pyriform urns found in a line, did not reveal any special feature.

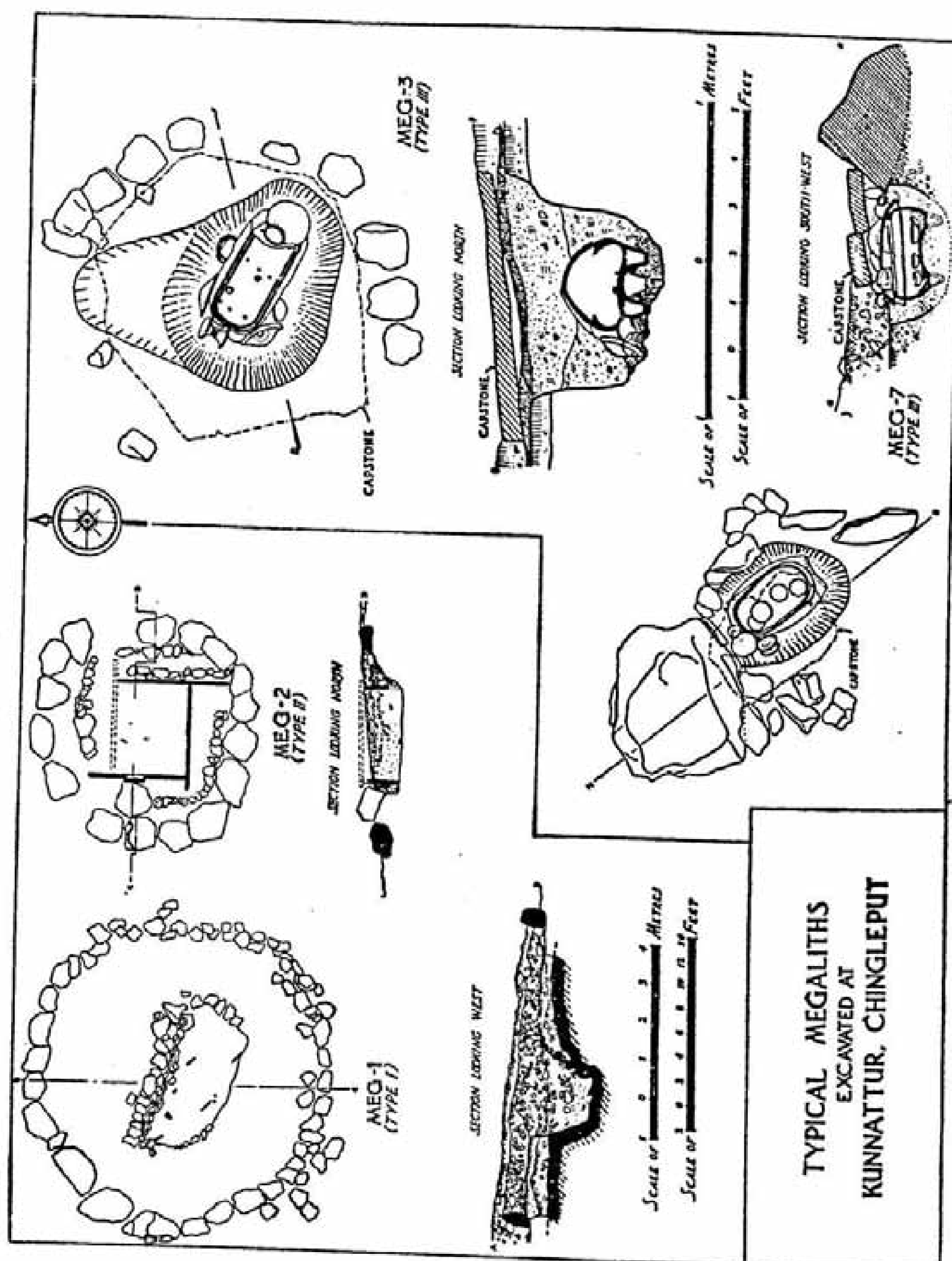

TYPICAL MEGALITHS
EXCAVATED AT
KUNNATTUR, CHINGLEPUT
MEG-1
(TYPE I)
SECTION LOOKING WEST
SCALE OF METRES
SCALE OF FEET
MEG-2
(TYPE II)
SECTION LOOKING NORTH
MEG-3
(TYPE III)
CAPSTONE
SECTION LOOKING NORTH
CAPSTONE
SCALE OF METRES
SCALE OF FEET
MEG-7
(TYPE III)
SECTION LOOKING SOUTH-WEST
CAPSTONE
CAPSTONE

Fig. 15

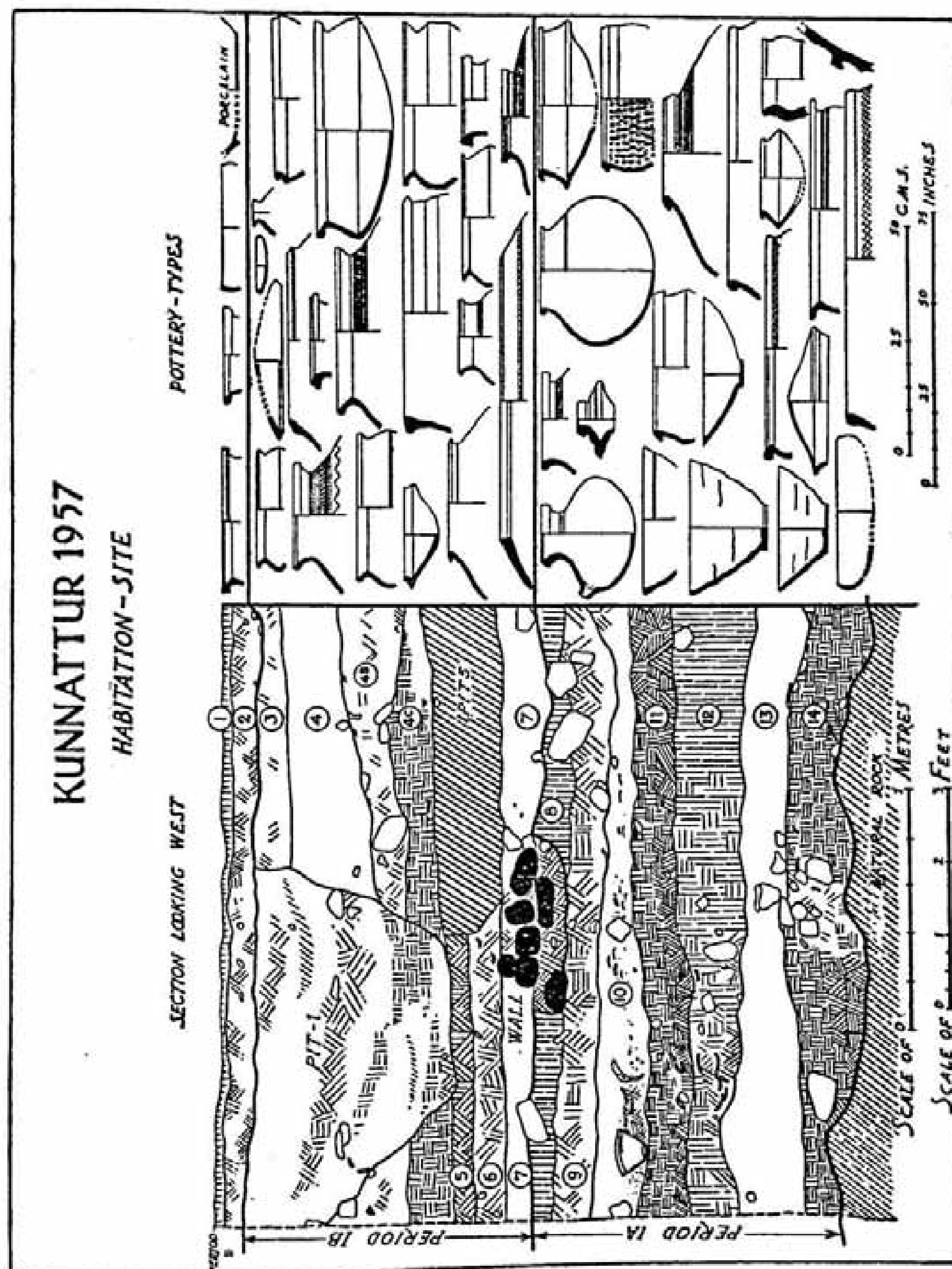

KUNNATTUR 1957
HABITATION-SITE
SECTION LOOKING WEST
POTTERY-TYPES
PORCELAIN
PERIOD IB
PERIOD IA
PIT-1
WALL
PITS
NATURAL ROCK
SCALE OF METRES
SCALE OF FEET
CMS.
INCHES

FIG. 16

Megalith 4 was a pit-circle with a double line of circle-stones, measuring in diameter 32 and 17 ft. respectively. Excavation at the Megalith is in progress.

Megalith 5 (pl. XLVI), situated on a steep slope, was a huge cairn-circle with an outer diameter of 35 ft. Enormous granite boulders, exceeding 6 ft. in length, were utilized as circle-stones down the slope, and smaller ones (or none at places) up the slope. In the north-eastern portion were found a few pieces of bone in a broken pot overlying the cairn-stones, suggesting a funeral rite after the pit had been closed. The central pit, with a diameter of 9 ft., just below the layer of cairn-stones, is under excavation.

Megalith 7 (pl. XLVII), representing a type similar in many respects to Megalith 3 excavated last year, contained a four-legged terracotta sarcophagus. But, unlike Megalith 3, the capstone rested on boulders about 8 in. above the old surface and was not flush with the ground. There were no circle-stones. Within the pit was found a four-legged sarcophagus with holes at the bottom; it measured 1 ft. 9½ in. X 1 ft. lin. x 7 ½ in. and contained four small cups of the Black-and-red Ware but no bones or iron objects. Its orientation was north-west to south-east. Its lid, also with holes, had one of the ends truncated (pl. XLVIII A). Over the lid and below the capstone were dishes and bowls, four in number, and beside the lid were two other pots and a ring-stand.

In a small strip of land, apparently left undisturbed by manure-diggers, a small trench was excavated down to a depth of 9 ft., the level of the bed-rock. Tentatively, two Periods were noticeable, with Period I divisible into two Sub-periods, A and B (fig. 16).

The total occupational deposit of Period I exceeded 8 ft. In Sub-period A no structure was met with, save a brick wall (size of bricks 10 X 7½ X 2½ in.) and a drain made of pottery pipes fitted into each other (pl. XLIX A). In Sub-period B two ruined rubble-stone walls (pl. XLIX B) were traced to a length of 8 ft. 5 in. and 6 ft. respectively. The ceramics (fig. 16) consisted predominantly of a sturdy ware with a bright-red slip in types strongly reminiscent of the red-ware group found at Brahmagiri and Chandravalli in the 'Andhra' levels, though the typical Russet-coated Painted Ware was absent. Sherds of the Black-and-red Ware were present throughout in limited quantities. The entire pottery, with the exception of large jars, was wheel-turned. The straight-sided or slightly incurved shallow dish occurred in the lower levels of Sub-period A. The commonest types were the lid with a flanged waist, conical bowl, carinated cooking vessel with or without flange, rounded basin with an everted rim, pot with a grooved rim and shouldered jar with a flattened and thickened rim. A basin, with deep notches in the interior, might have been used for peeling vegetables.

From different levels were recovered fragments of portable hand-made pottery ovens, horse-shoe on plan, decorated with finger-tip designs.

Beads of quartz, glass and coral, in various shapes and colours (pl. XLVIII B), were found at all levels. The other antiquities consisted of glass bangles, terracotta figurines, a terracotta seal depicting an animal, a gold pin and pin-head and fragments of three copper coins in a bad state of preservation.

In Period II were dug large pits causing disturbance to the underlying strata. The occupation, characterized by the use of porcelain, was barely 6 in. deep. The Period may correspond to the times of Sekkizhar Peruman, the great Saiva saint of the twelfth century, who composed the *Peria-puranam* and lived at Kunnattur. The normal pottery (fig. 16) was in coarse red or black ware.

EXCAVATION AT JADIGENAHALLI, DISTRICT BANGALORE.—The Mysore Department of Archaeology, under Dr. M. Seshadri, excavated four megalithic tombs at Jadigenahalli, 20 miles from Bangalore, all of the cairn-circle type. The largest of them, a double-stone

circle, had a diameter of 20 ft. and the smaller ones of nearly 6 ft. Excavation revealed that the circles enclosed burial-pits covered up by a clayey filling. The pits themselves were unusually deep, going down to 12 to 13 ft., and were, in Megaliths 1 and 2, sub-divided into two smaller pits in their lower parts (pl. L A), one of them holding a terracotta sarcophagus. The sarcophagus in Megalith 3 was of a very small size. The sarcophagi had hand-made bodies but wheel-made hollow legs and were, in each case, covered with a domical lid with a set of three perforations at each end (pl. L B). None of them contained any skeletal remains.

Pottery was distributed in both the sub-pits and was accompanied by a limited number of iron objects, consisting of sickles, daggers and an object resembling a frying pan. The pottery included vessels in red and black wares and the usual Black-and-red Ware, which was occasionally highly polished. High-necked red polished jars, invariably covered with a concave lid, formed a special feature.

EXCAVATION AT DHANORA, DISTRICT DRUG.—The Madhya Pradesh Department of Archaeology, under Dr. M. G. Dikshit, carried out excavation in the megalithic area at Dhanora, 56 miles south of Raipur in Madhya Pradesh, where the megaliths lie in a group of nearly five hundred, with a view to ascertaining their nature and possible connexions with the megaliths of peninsular India and links, if any, with their counterparts prevailing among the present-day aboriginals of Bastar.

Superficially, the megaliths in the area can be classified under four types: Type I, apsidal stone enclosure with a capstone lying flush on a heap of cairn (pl. LI A); Type II, apsidal stone enclosure around a menhir at its centre, ranging from 5 to 7 ft. in height, and a smaller one, 3 to 4 ft. in height, situated at a distance of 6 to 7 ft. to the south of the former (pl. LI B); Type III, alignment of apsidal stone enclosures like Type II, occurring in groups of five to seven; and Type IV, menhirs, often of huge proportions, kept in position by means of buttresses of large boulders (pl. LII A).

In all, four megaliths, including three of Type I and one of Type II, were excavated. The excavation of the first group revealed that the apsidal enclosures—each marking the northern, eastern and western boundaries of the burial, the southern side being deliberately kept open—surrounded a burial-pit covered up by a cairn-packing with a capstone lying flush on the cairn-heap. The pit generally contained a few fragments of skeletal remains, besides objects like beads and glass bangles, but no pottery. One of the tombs contained a copper vessel, traced by its outlines left in the soil, but no other object. The capstones measured 10 to 12 ft. in length, 4 to 5 ft. in width and 2 to 3 ft. in thickness.

The excavation of an apsidal enclosure of Type II (pl. LII B) showed that the menhirs, oriented north-south, were supported by a packing of rubble and clay. As no object was associated with them, they probably served only as memorial-stones.

The evidence derived from the excavation is not full or even representative and indicates the necessity of further work.

EXCAVATION AT NAGARJUNAKONDA, DISTRICT GUNTUR.—Apart from its famous Buddhist relics, the Nagarjunakonda valley proved to have been the habitat of the early man, whose relics, both of the Palaeolithic *(1955-56,* p. 68) and Neolithic-cum-Copper Ages, were discovered by Shri K. V. Soundara Rajan. The observed distribution of distinctive palaeolithic tool-groups in specific areas in the valley and the occurrence of a patch of cemented gravel in a nullah-section, besides other field-data, supplied a minimum sequential basis for the entire industry in the absence of regular terrace-gravels.

The neolithic zone was located in the area to the south-west of Nallarallabodu, to the west of the road to the Museum. A limited excavation in some parts of this area confirmed the clear neolithic tool-bearing horizon and yielded, besides celts and axes of many types and in different stages of manufacture, other associated equipments, such as a typical neolithic pottery, notably a thick burnished grey ware, a damaged urn-burial of a child and fragments of copper, beside animal-bones in plenty in pits. The culture was thus analogous to the chalcolithic culture of Brahmagiri, Sanganakallu and Maski.

A megalith situated on the south-western slopes of the Chula-Dhammagiri hill was also excavated (pl. LIII A). It had, outwardly, a stone circle of about 20 ft. diameter with a cairn-packing within, covering a multiple capstone of Cuddapah slabs, each measuring 9 ft. X 3 ft. X 3 in. on an average. On excavation, an oblong pit, 5 ft. 6 in. deep, cut into the disintegrated rock, stood revealed. At the bottom was laid an oblong slab-cist (pl. LIII B), 7 ft. X 1 ft. 6 in., with thin multiple capstone-slabs covering it, but without a regular port-hole or floor-slab. While in the pit, outside the cist, were found the typical megalithic pottery, including the Black-and-red Ware, iron objects and some damaged skeletal remains, the cist itself contained at least three skulls and many long bones, in secondary and disarticulate interment.

The excavation of the historical remains in the valley progressed in good pace in its third year *(1954-55,* p. 22; *1955-56,* p. 23) under Dr. R. Subrahmanyam, assisted by Shri K. V. Soundara Rajan, Shri Ballabh Saran and, later on, Dr. S. C. Ray. Outstanding among the fresh discoveries were: ritualistic edifices within the fortified area and two inscriptions, both in Sanskrit, respectively dated in the sixteenth and twentyfourth years of the Ikshvaku king Ehavala Chantamula. The first inscription (pl. LVIII) supplied a new and fifth name, that of Virapurushadatta II, mentioned as a son of Ehavala Chantamula and his queen Kupanasiri; he was apparently a royal cousin of king Rudrapurushadatta, noted last year. The inscription recorded the erection of a temple of Mahadeva, called Pushpabhadrasvamin, the consecretion of the pillar bearing this record as *dhvaja-stambha* in the temple and the endowment of a village towards its perpetual maintenance. The second inscription, on a sculptured frieze in a *Buddha-chaitya* (pl. LVII A), recorded the installation of a Buddha-image in the *chaitya* by one Kumaranandin, a *sreshthin* (tradesman).

This year's work showed a well-defined lay-out of Brahmanical and Buddhist structures in the western part of the Vijayapuri valley. It was observed that the northern reaches of the river-flank, including the fortified zone, had mainly Brahmanical shrines and ritualistic structures, while the area elsewhere, including the interior, had countless Buddhist monastic establishments, thus lending significance to the inherent Brahmanical faith of the Ikshvakus. A further distinctive feature of the river-side zone was the provision of a heavy brick embankment all along this stretch with a special U-shaped dock-like recessing to the south of the main *river-ghat.*

To the south of the embankment was a large pillared edifice, taken as a wharf by early excavators. It was, by excavation, identified as a temple (pl. **LIV** A) dedicated to Karttikeya on the basis of the inscribed pillar-records occurring here (pl. LIX), which mentioned the name of Chanda-Sakti-kumara, probably the founder of the temple. The structure itself comprised an L-shaped pillared wing, of which the portion at a lower level to the south, containing massive pedestals, might have been the shrine proper, leading to the upper pillared hall by balustraded steps.

About 200 yards further south was excavated another hall with pillars carrying fragmentary and much-weathered inscriptions in shell-characters, similar to those at Ghantasala, Jaggayyapeta and Salihundam. Due south, 2 furlongs away, was another pillared complex, with enclosure-walls, which yielded fragments of pedestals, torsos and a head of Karttikeya (pl. LVII B). Among these could be noticed a standing figure, in the

samabhanga pose, of Karttikeya, 1 ft. 10 in. high, with the left hand akimbo holding a *kukkuta* (pl. LVII G). The repeated occurrence of Karttikeya-images and shrines on the riverside and also in a regular temple-complex in the interior (pl. LIV B) would tend to show the importance of Karttikeya-worship for the Ikshvakus and the continuity of the worship by the succeeding Chalukyas, whose early venue of activity Vijayapuri undoubtedly was.

Situated almost in the centre of the fortified area, there were distinctive ritualistic structures enclosed by a massive compound-wall, with flanks measuring 54 ft. and a central passage 18 ft. wide. The central feature was a square well-plastered brick tank (pl. LV A) measuring 27 ft. X 27 ft. X 8 ft. 6 in.—a four-tiered structure with the bottom 6 ft. 4 in. square—with short side-steps on its flanks at each level. A drain was provided at the top tier at a height of little more than 7 ft. and was led off first into a well-built closed passage and subsequently as a narrow slab-covered drain towards the river. The water-level within the tank was, therefore, designed to be maintained at a specific level, tallying with a *purushakara* (human height). The tank was evidently meant for the purificatory *avabhritha*-bath by the performer of an *asvamedha.* The specific ritual-association of the tank was further indicated by the occurrence of animal-bones, presumably of a horse and a goat (pl. LVI A), less than 30 ft. away, outside the tank but within the outer enclosure. Another curved brick tank (pl. LV B), to the south of the first one, was built in two tiers, the top cross-measuring 18 X 12 ft., and had the plan of a *kurma* (tortoise) with the head-projection towards the west; its overall depth was 4 ft. 6 in. A covered drain was provided at the bottom to lead water out. The small dimensions and deliberate shape of the tank barred out its having been a secular bathing pond and would rather make it a *kurma*-altar or *-kunda*—in any case a water-reservoir of ritualistic import.

The most elaborate among the Buddhist religious structures was a monastic complex exposed on the outskirts of the rampart, where two adjacent monastic units were found. One (pl. LVI B) comprised a brick *stupa* with eight spokes, with a diameter of 36 ft., and provided with four diminutive votive *stupas* at the corners of its outer enclosure. To its south was a *vihara* with four wings enclosing a pillared *mandapa.* A Buddha-*chaitya* was also situated to the west of the main *stupa,* wherein was found a most interesting inscribed and sculptured frieze (pl. LVII A), 8 ft. 6 in. X 4 ft. 9 in. X 7½ in., which had been the facing of the podium on which the Buddha-image once stood. The inscription, in Sanskrit language and in Brahmi script, gave the date as the twentyfourth regnal year of Ehavala Chantamula. The panel depicted the principal incidents in the life of Buddha in medallions in deep relief, alternating with carved *mithuna-panels* in bas-relief. The other adjoining monastery, which also had a *stupa* with four spokes and a U-shaped *vihara,* had a square shrine-chamber in the quadrangle of the latter, containing a fine torso of Buddha on a lotus-pedestal.

A tract lying to the south of the Kundeluggutta hill revealed, on excavation, two important sites. One of them was a monastic complex with a *stupa,* U-shaped *vihara* in two clear stages of occupation, pillared hall and two shrine-chambers, with the torsos of Buddha pertaining to them lying in the vicinity. The other was a large stepped masonry tank, roughly 100 ft square, with a well-planned apsidal shrine having a hundred-pillared hall in front, juxtaposed to the tank. These and a neighbouring residential structure, showing three phases of occupation and with a pillared hall containing fragmentary inscriptions of the third-fourth centuries, adjacent to it, were all situated within a massive brick enclosure, 487 ft. square, with a solitary gateway on the east

A pillared *mandapa-site* with four memorial-pillars *(chaya-stambhas)* bearing sculptured panels and fragmentary inscriptions, would merit special mention. The Prakrit inscriptions on them proclaimed them to be memorials to the war-chiefs, called here *rathikas,* who

presumably fell in the cause of the early Ikshvakus. Such an early date for hero-stones is remarkable.

The small finds of the year comprised coins, beads, terracottas, copper and iron objects and stuccos, some with painted designs, and gold ornaments (pl. LX B).

Among the coins (pl. LX A, G and D) were two Roman *aurei,* belonging respectively to Tiberius (A.D. 16-37) and to Faustina the Elder, mother-in-law of Marcus Aurelius and queen of Antonius Pius, issued after A.D. 141. While the lead coins bore the legends of the Ikshvaku kings Chantamula and Virapurushadatta, the copper ones were all Satavahana issues, with the names of Pulomavi, Yajna Satakarni and Satakarni. Two tiny silver coins of the medieval Vijayanagara king Harihara II were also found on the surface.

The terracotta collection from the different sites (pl. LXI) represented *mithunas,* figures of Vaisravana, Hariti and Karttikeya, mother-goddess, horses, elephants, bulls, a mother-monkey feeding her child, a lion-face, a plaque showing a couchant bull, toy-carts, *makara-kundalas, bullae,* marks like the Ujjain-symbol and *svastika,* seed-vessel of lotus, etc. Coin-moulds, particularly of Gautamiputra Satakarni, were also in evidence.

Noteworthy among the metal objects was a bronze statuette (pl. LVIID) representing prince Siddhartha, in the role of an archer, in *abhanga* pose, with an intricate treatment of coiffure and garments, representing a classical type of art and craft of this region under the Ikshvakus.

3. EPIGRAPHY

A. SANSKRITIC AND DRAVIDIAN INSCRIPTIONS

Of the inscriptions examined by the Government Epigraphist for India, the following are noteworthy.

INSCRIPTION OF KANISHKA, MATHURA MUSEUM.—The inscription is dated in the fourth regnal year of Kanishka, the peculiarity of its palaeography being the use of the so-called eastern Gupta variety of the letter *h*.

IKSHVAKU INSCRIPTION, NAGARJUNAKONDA, DISTRICT GUNTUR.—The inscription records the installation of an image of Buddha by the *sreshthin* Kumaranandin son of Isvaranandin, in the twentyfourth regnal year of the Ikshvaku king Ehavala Chantamula. See also p. 36.

SOMAVAMSI GRANT, ADBHAR, DISTRICT RAIPUR.-The record, received from the Curator, M. G. M. Museum, Raipur, registers the grant of the village of Kontinika in Ashtadvara-*Vishaya* to Narayan-opadhyaya by Maha-Nannaraja, son of Tivaradeva of the Somavamsa.

INSCRIPTIONS OF THE CHANDRAS OF ARAKAN.—Impressions and photographs received for examination from the Director of Archaeological Survey, Burma, pertain to epigraphs from the *stupa-sites* at Vesali near Mrohaung. The inscriptions belong to kings Nitichandra and Virachandra of the Chandra dynasty, who flourished in the sixth century A.D. These are the only lithic records of the kings so far discovered, although their coins are already known.

VISHNUKUNDIN GRANT, DISTRICT GUNTUR—The copperplates record the grant of Sundi to Svamisarman, a resident of Aki, by Vikramendravarman II of the Vishnukundin dynasty. This is the second known charter of the ruler.

PALLAVA GRANT, DISTRICT GUNTUR.-The copper-plate registers the grant of the village of Kubunuru on the southern bank of the river Musuna in Pumi-*rashtra* on the occasion of the *uttarayana-sankranti* to Donasarman, whose forefathers hailed from Urputuru-grama. It was issued in the nineteenth regnal year of the Pallava Paramesvara-varman I. The details of the date help in fixing the duration of the regions of the king and his successor.

PALLAVA INSCRIPTION IN ROCK-CUT CAVE, SIYAMANGALAM, DISTRICT NORTH ARCOT.—It records con Auction of a sluice by Adavi after getting the approval of Sri-Gangaravyar Nerkutti-perumanar in the fourth regnal year of the Pallava Dantivarman.

EASTERN GANGA GRANT, DISTRICT SRIKAKULAM.- Dated in the Ganga year 313, the charter registers the grants of the villages of Pattali in Krishnavattamva and Arali by the yuvaraja Rajendravarman and his mother Loka-mahadevi respectively. The charter was drafted by the *mahasandhivigrahika* Samiraja and engraved by the *akshasalin* Damachandra.

PANDYA INSCRIPTION, PERUMBULLI, DISTRICT **MADURAI**.—The damaged record engraved on a rock near the Kannimar temple in the village, introduces one Nakkam' pullan and his predecessors up to three generations and briefly describes their exploits in the service of the contemporary Pandya kings. Nakkampullan is stated to have served under Varaguna-maharaja.

RASHTRAKUTA CHARTERS, CHINCHANI, DISTRICT THANA.—Of the two grants secured for examination from the Erector of Archives, Bombay, the earlier one, dated in Saka848 (A.D. 926), records an endowment of the village of Kanaduka in Kolimahara-vishaya for the upkeep of a *mathika,* offerings to the goddess Dasami installed in it and feeding of nine Brahmanas of the Pancha-gaudiya Mahaparshad at Samyana by the chief Madhumati *alias* Sugatipa of the Tajika (Arab) community, who was ruling over Samayana-*mandala* under Krishna II and Indra III. The other belongs to the reign of Krishna III and records an interesting decree *(vyavastha)* issued by the deity Billamaladeva and his *varikas,* stipulating the payment of forty *drammas* annually at the end of the *dipotsava* by the management of the *mathika* of Bhagavati as *srotaka* for a piece of land belonging to the temple of the god but enclosed within the compound-wall of the *mathika* of the goddess.

ROCK-INSCRIPTION, SIYAMANGALAM, DISTRICT NORTH ARCOT.- It records a grant of land by Akkaiyadevi, a daughter of Krishna III and the wife of Rajaditya, who is stated to have been ruling over the area in question.

PRATIHARA GRANT, BHARAT KALA BHAVAN, VARANASI.- The charter records a grant of two *hala*-measures of land in the village of Tauda (or Katauda) and ten house-sites in Tithasevani-*grama* by king Hariraja of the Pratihara dynasty. The grant was made on the occasion of a solar eclipse in Samvat 1040 (A.D. 893)

SILAHARA GRANT, DISTRICT THANA.- Dated in Saka 956 (A.D. 1034) in the region of the Silahara Chhinturaja (Chhittaraja), the charter registers a gift of a ghanaka (oil-mill) by his feudatory the *maha-mandalesvara* Chamundaraja in favour of the *mathika* at Samyana for a lamp in the shrine of Bhagavati

KADAMBA GRANT, ST. XAVIER'S COLLEGE, BOMBAY.-The document registers a taxfree gift of the village Sauvayi-pataka situated in Dheraka to a priest Narayana, whose forefathers are said to have migrated from Amberamangala in Kachitikasa-*vishaya.* The grant was made on the occasion of a lunar eclipse in Saka 960 (A.D. 1038).

MODHA GRANTS, CHINCHANI, DISTRICT THANA.- The two charters belong to the Modha chief Vijjala of Samyana and are dated in Saka 969 (A.D. 1040) and 975 (1053) respectively. The earlier of them records the grant of the *Siridika* of the village Kanadda in favour of certain householders and scholars attached to the mathika at Samyana by the chief in consultation with his ministers Mummaraka and Domabalaiya, while the other registers, as a permanent endowment, the grant of three *drammas*, received periodically as *siridika* in respect of Enasa-grama in favour of the same scholars and householders of the same mathika.

EASTERN GANGA INSCRIPTIONS, CHITTIVALASA, DISTRICT VISAKHAPATNAM.- These Comprise three epigraphs engraved on two granite pillars near the Travellers' Bungalow in the village, dated respectively in the fifth, eleventh and twentyfirst years of Anantavarman Chodaganga. They record variously the levy of a sixteenth share of each *achchu* on pilgrims going for tonsure to the temple of Gokarnesvara-mahadeva at Gudivada in Pattanamu (Kalingapatam) towards the expenses for maintaining a perpetual lamp, the

grant of land for offering to and worship of Gokarna-Rajanarayanesvara-mahadeva at the same place by one Rajanarayana with the consent of Jeddapa-nayaka and the gift of land for providing offering to the same deity.

EASTERN CHALUKYA INSCRIPTIONS, NARASAPUR, DISTRICT WEST GODAVARI.—Four pillars in the compound of the Madana-Gopala-svami temple contain inscriptions of the later Eastern Chalukya kings known by the common epithet Vishnuvardhana. One of them equates the thirty fifth regnal year of the king to Saka 1092, thus yielding Saka 1057 (A.D. 1135) as the initial regnal year of the king, who may thus have been one of the forefathers of Mallapa Vishnuvardhana crowned at Pithapuram in A.D. 1202. Two other records belong to Virabhadresvaradeva-chakravartin, who bore the title Sarva-lokasraya Vishnuvardhana and are dated respectively in the fifteenth and twentyfourth years of his reign. The exact relationship of this chief with the Eastern Chalukya house is unknown.

GRANTS IN THE RAJPUTANA MUSEUM, AJMER.—Of the three charters, one belongs to the Chahamana Asaraja of Nadol, who is said to have killed the Turushkas and freed Prithvipala from them. The second epigraph records grants by the kings Asaraja, Ratnapala and Sohanapala on different dates, while the third belongs to Kumarapala and records that Alhana, a feudatory of the king, restored the village of Nandana to the temple of Traipurushadeva.

INSCRIPTION OF MUHAMMAD BIN TUGHLUQ,, FORT, KALYAN, DISTRICT BIDAR.—The record, in Sanskrit and Nagari characters, is dated in Saka 1248 Kshaya (A.D. 1326) and refers to the re-installation of the god Madhukesvara at Kalyana when the *maha-pradhana* Mallika Kamadina was governing Maharashtra-*mandala*. This is the earliest record of Muhammad bin Tughluq so far found in south India.

INSCRIPTIONS OF DEVARAYA-MAHARAYA, DONAKONDA, DISTRICT NELLORE.—Dated in the cyclic year Vyaya, corresponding to A.D. 1406, one of these inscriptions records the construction of a temple and a wall around it at an expense of one hundred and ninetyfive *dhankas (tankas)* by Mankana, when Chamapodeya, son of Kampadeva, was ruling over the village of Donakonda under Devaraya-maharaya. Another epigraph, dated in Saka 1349 (A.D. 1427), records a cash endowment to the goddess Nunkala-paramesvari of Donakonda by Ramayadeva-maharaja, son of Kamayadeva-maharaja and ruler of the Pina-Eruva territory.

MISCELLANEOUS INSCRIPTIONS __ The Director of Archaeology, Mysore State, collected ten stone inscriptions, the most important of them being a fragmentary record from Koppal, District Raichur, belonging to the reign of the Rashtrakuta Nripatunga. Of the other records, three belong to the Hoysala rulers.

The Director of Archaeology, Rajasthan State, reports the discovery of the following inscriptions: inscription on the lower part of a Jaina image, dated *samvat* 1116 (A.D. 1059-60), from Tantoli, District Ajmer; inscription on a memorial-stone, dated *samvat* 1166 (A.D. 1109-10), from Kalesra, District Ajmer; inscription of the *maharaja-kumara* Prithvisimha, dated *samvat* 1303 (A.D. 1246-47); inscription, dated *samvat* 1681 (A.D. 1624-25) in the *chhatri,* both from Khamnor, District Udaipur; inscription of Bharatu-pattall of Mewar, found at Ahar, District Udaipur; and inscription, dated *samvat* 1703 (A.D. 1646-47), in the Udaipur Museum.

Shri V. S. Wakankar of Ujjain found two copper-plates, dated *samvat* 1074 (A.D. 1017-18) in the possession of Shri Udaisinghji Saindhava of village Mahudi, near Sonkatch, District Sihore, recording a grant of the Paramara Bhoja.

B. ARABIC AND PERSIAN INSCRIPTIONS

The Assistant Superintendent for Arabic and Persian Inscriptions examined nearly one hundred and fifty inscriptions, the important ones of which are noted below.

INSCRIPTIONS OF THE TUGHLUQS.—An inscription from Cambay, District Kaira, records the construction of a Jami' mosque by Daulat Shah Muhammad al-Butahari. Dated A.H. 725 (A.D. 1325), in the reign of Muhammad bin Tughluq Shah, it is an important record for determining the time of accession of that king. Another inscription, of Muhammad Shah, was from Petlad, District Kaira, recording the construction of a well or water-tank by a lady named Kad Banu, wife of Iran Shah and daughter of Sayyid Shamsu'd-Din Yasin al-'Alawi Tabataba, out of her personal property, in A.H. 731 (A.D. 1331).

Of the four inscriptions mentioning Firuz Shah Tughluq, all from Cambay, the earliest, dated A.H. 755 (A.D. 1354), mentions a noble by his title (the name being lost), viz. Malik Quran Khwan, the *kutwal of* Cambay, who constructed a mosque there. Another, dated A.H. 782 (A.D. 1380), mentions that during the governorship of the *iqta'* of Cambay of Malik Mufarrah Sultani, the *dawidar-i-khass,* a mosque was erected by 'Abdu'llah, son of Jamalu'd-Din al-Harawi. The third epigraph, mentioning the same governor with the additional title Farhatu'1-Mulk, records the construction of a mosque by Ahmad, son of Wajih, son of Hasan al-Quraishi in A.H. 787 (A.D. 1385). The fourth record, dated A.H. 807 (A.D. 1405), mentions Firuz Shah's slave Malik Khushbash, who constructed a mosque in the time of Masnad-i-'Ali Zafar Khan, as the *kutwal* of the province of Gujarat. Another inscription of the same king, from Patan, District Mehsana, dated A.H. 765 (A.D. 1364), mentions Malik Mu'azzam Fakhru'd-Din, son of Khan-i-A'zam Sher Khan Muhammad Bak.

INSCRIPTIONS OF THE SULTANS OF GUJARAT.—An inscription of Sultan Ahmad I, from Patan, dated A.H. 820 (A.D. 1417), mentions Jamalu'd-Din Bihamad, probably the governor of the district, as the builder of a mosque. Another inscription of this ruler from Cambay records the reconstruction of a mosque by him at the suggestion of Maliku'l-Umara Malik Marjan in A.H. 831 (A.D. 1427).

Of the two inscriptions of Mahmud I, both from Cambay, one records the erection of a mosque during the governorship of Malik Amin by Nakhuda Yahya, son of Tandel Nayna Sailani, a servant of Khan-i-A'zam Kamal Khan, in A.H. 883 (A.D. 1478); the other is a record of Jamal, son of Fathu'llah, known as Malik Makhdum, a boon-companion of the king, who died in A.H. 904 (A.D. 1498).

The inscription of Muzaffar II, from the same place, dated A.H. 918, second Shamsiyya year (A.D. 1512), gives details of taxes abolished at royal orders for the relief of the travellers to and inhabitants of the district of Cambay.

An inscription, from Ahmadabad, recording the construction of a step-well by Shaikha, son of 'Isa, entitled Munjal, mentions two kings: Qutbu'd-Dunya wa'd-Din Abu'l-Muzaffar Bahadur Shah, during whose reign, in A.H. 940 (A.D. 1534), the construction began, and Nasiru'd-Din Mahmud III, in whose reign it was completed in A.H. 946 (A.D. 1539-40). This is the only inscription discovered so far that gives the titles of Bahadur Shah in full.

BILINGUAL INSCRIPTION OF 'ALAU'D-DIN SHAH BAHMANI, STATE MUSEUM, HYDERABAD. —Dated A.H. 848 (A.D. 1444), it records the construction of a step-well by Makhduma-i-Jahan Bibi Shahnaz, mother of Khan-i-Mu'azzam Mahmud Khan.

INSCRIPTION OF 'ADIL KHAN FARUQI, BURHANPUR.—An inscription mentioning the construction of a mosque in A.H. 877 (A.D. 1472-73) by Malik Taj, son of Kaila, it refers to

the contemporary Khandesh ruler as 'the great Khan and illustrious Khaqan 'Adil Khan' and not as 'Adil Shah.

Two QUTB SHAHI INSCRIPTIONS, HYDERABAD.—Both dated in the reign of Sultan 'Abdu'llah Qutb Shah, one mentions the construction of a mosque, in A.H. 1045 (A.D. 1635), by Haji 'AH Husaini and the other that of another mosque, in A.H. 1069 (A.D. 1658-59), by Saliha, wife of Bare Sahib and daughter of Dargah Quli Khan.

MISCELLANEOUS INSCRIPTIONS.—Of a number of epitaphs of eminent men from all walks of life who died at Cambay during the thirteenth and fourteenth centuries, three respectively belong to: the chief of merchants and king of sailors, Haji Ibrahim, son of Muhammad al-Irbili, who died in A.H. 690 (A.D. 1291); Zainu'd-Din 'Ali, son of Salar, son of 'Ali al-Yazdi, who died in A.H. 685 (A.D. 1287), also containing a *ghazal* composed by him; and Shamsu'd-Din Muhammad, son of 'AH, son of Yahya ibnal-Jauzi al-Jazri, a profound scholar and a great theologian, who died in A.H. 707 (A.D. 1307).

An epitaph from Burhanpur mentions the death of a lady, a *qariya* (expert in the art of recitation) of the Quran, Maryam by name, daughter of Muftakhar Khan Mazandarani and wife of Abu'1-Fadl Khan, who engraved the epitaph. She died in A.H. 1130 (A.D. 1718).

4. PRESERVATION OF MONUMENTS

A. MONUMENTS OF NATIONAL IMPORTANCE

NORTH-WESTERN CIRCLE

Delhi

RED FORT, DELHI.—The leaky roofs of the Diwan-i-Khas and Rang Mahal were re-laid with new lime-cement concrete after the removal of dead and porous concrete and replacement of the rot-affected wooden members supporting the roof.

TOMB OF ABDUR RAHIM KHAN-I-KHANAN, NEW DELHI.—Work on the improvements to this famous tomb, taken up last year *(1955-56,* p. 34), was continued. A part of the decayed masonry on the outer face of the dome was removed and the fabric of the structure rendered watertight by the renewal of the masonry-shell in lime-cement mortar. The open joints in the brickwork of the intrados of the dome were strengthened with recessed pointing. The voids and gaps in the facades of the tomb were filled with masonry conforming to the original moulded ornamentation.

SULTAN GHARI'S TOMB, DELHI.—A 10-ft. wide gravelled pathway was laid to provide an approach to this earliest tomb in Delhi from the main road.

HAUZ KHAS, DELHI.—The facade precariously resting over tilted pillars and leaning arches of the mosque was dismantled carefully and reconstructed in lime-cement mortar with old material in conformity with its original appearance.

JAMI' MASJID, DELHI.—Work on this famous mosque, initiated last year *(1955-56,* p. 34), was continued this year. A number of decayed facing slabs of red sandstone were replaced by new ones on the south basement and south and north gateways. Some of the pillars and pilasters of the corridors were also renewed in sandstone. In the south gateway some new frieze-stones carved with floral designs-were fixed.

CHAUNSATH KHAMBA, NIZAMUDDIN, NEW DELHI.—The arched openings in the northern compound-wall of this attractive tomb, originally provided with stone screens but subsequently blocked up, were cleared and the missing screens renewed. The holes and open joints in the intrados of the domes, caused by the rusting of iron clamps, were grouted and pointed in order to stop further damage to the masonry. The premises were levelled and an iron gate provided in the western compound-wall.

Himachal Pradesh

TRILOKINATH TEMPLE, MANDI—Owing to heavy rains and floods in October 1955, the outer stone shell on the south of the *sikhara* of the temple got completely detached from the main fabric. The portion was rebuilt with dressed and moulded stones

matching the original work (pl. LXII). In the course of clearance a stone sculpture was recovered (pl. LXIII A).

Punjab

FORT, KANGRA.—A large-scale clearance of debris around the ancient temple in the fort exposed the original approach and a number of beautiful sculptured architectural stones (pi. LXIII B). Excavation of debris at another site brought to view part of a stone platform, obviously associated with some temple.

FORT, BHATINDA.—This is an extensive fort, square on plan, and is built on a raised ground with thick and high brick walls with a mud core and circular tapering bastions. The collapsed revetment-walls on its inner face at the north-west corner were rebuilt with old bricks in *kankar-lime* mortar.

MUGHUL GARDEN, PINJORE, DISTRICT KANDAGHAT.—The enclosure-wall of this famous garden was repaired by the rebuilding of the bulged and missing portions over an extensive surface.

Rajas than

FORT, RANTHAMBHOR, DISTRICT SAWAI MADHOPUR.—Thick vegetation covering the entire area of this fort, famous in Rajput history, was partly cleared. As a first-aid measure to arrest further decay, all the cracks in the gateways, roofs and walls were grouted and filled with lime-cement mortar.

NORTHERN CIRCLE

Uttar Pradesh

TAJ MAHAL, AGRA.—The work on the facades of the mausoleum, which had been in progress since February 1953 *(1953-54,* p. 17; *1954-55,* p. 33; *1955-56,* p. 36), was brought to completion this year, with the exception of the work on the dislodged pilaster in the south-west corner.

To remove all misapprehensions caused by some ill-founded press-reports that the condition of the monument was deteriorating, the monument was examined in detail by a body of engineers, who, while perfectly satisfied about its stability, took the opportunity for reviewing the work done in implementation of the recommendations of the Committee of 1943, examined the other parts of the main structure and subsidiary buildings and drew up a programme of repairs.

Among the measures which the present body advised for immediate execution were the fixation of tell-tales all along the cracks in the underground vaults on the river-front and the execution of certain repairs of a special nature to the dislodged south-west pilaster of the main mausoleum, which included the removal of the flat strips of stone fixed on either side of the pilaster and resetting of the dislodged veneer-stones in position by cramps and dowels after a thorough grouting of the voids behind them. Tell-tales were fixed in the vaults, and the work on the pilaster is in progress.

FORT, AGRA.—Due to the fall of the lower portion of a bracket of the bay-window in the west facade of the Jahangiri Mahal as a result of the rusting of iron cramps, the window

had been abruptly pushed forward and the pillars holding the roof dislodged. The window was dismantled in entirety and reset after the replacement of the decayed and exfoliated stones together with the two brackets over which it rested.

The marble screen in the north Golden Pavilion protecting the door towards the ditch, which had been damaged in 1953, was restored after the original pattern.

IDGAH, AGRA.—The repairs to the Idgah started last year *(1955-56,* p. 36) were continued. The work executed this year consisted of the removal of the decayed brackets, *gardana-stones,* etc., of the roof of the central compartment and its reconstruction with sound material. The rebuilding of the roof of the southern compartment is in progress.

GROUP OF MONUMENTS, FATEHPUR SIKRI, AGRA.—The inner face of the city-wall to the south of the Agra gate was rebuilt in sections of 20 ft., 28 ft. and 15 ft., in continuation of the previous year's work *(1955-56,* p. 36). On the same wall, to the north of the Agra gate, as many as twentytwo parapet-battlements were restored, thus adding to the imposing view of the undulating wall-top. In the Dargah of Sheikh Salim Chishti, the loose inlay-pieces of Badshahi Darwaza were reset, while the replacement of the missing ones in the plinth of the tomb was continued. In Rang Mahal, where prince Salim (Jahangir) was born, the bulged wall of rubble masonry was reconstructed and certain leaky roofs made watertight.

AKBAR'S TOMB, SIKANDARA, AGRA.—An inlaid panel of the central arch of the mausoleum towards the east was reset after the grouting of the cavities at the back. Other missing and fractured stones in the contiguous area were replaced by new ones, and all the loose inlay-pieces were reset and missing ones restored. The vaulted roof of the bastion at the south-west corner of the enclosure-wall had cracked and sunk, threatening a dislocation of the *chhatri* crowning the bastion. Without dismantling and rebuilding the structure, the roof was temporarily strengthened by the erection of a masonry prop in the centre and the filling up of the arches in the periphery forming the vault. The bulged masonry was reconstructed and the roof rendered watertight.

'ITIMADU'D-DAULA'S TOMB, AGRA.—The loose inlay-pieces in the open marble terrace of the first floor all round the upper chamber were reset and the missing ones restored, so that water might not percolate through the grooves.

GROUP OF MONUMENTS, KHUSROBAGH, ALLAHABAD.—The repairs executed to these monuments included the resetting of dislodged *dasa*-stones in the platform of the tomb of Khusro's mother, provision of stone railings to the corner-rooms of the southern gateway and replacement of the doors of modern type by ones of Mughul pattern.

FORT, GARHWA, DISTRICT ALLAHABAD.—The famous Vishnu temple in the fort, constructed of granite blocks of large proportions, needed urgent repairs, such as the dismantling and replacement of the dislodged roof-slabs of the *mandapa,* rendering of the central shrine watertight and clearance of all stray boulders, beam-stones, etc., from the compound. The repairs are in progress.

NADAN MAHAL, LUCKNOW.—This monument, the only early Mughul structure at Lucknow, received attention. The compound-wall was underpinned and the roof of the main tomb made watertight.

RESIDENCY BUILDINGS, LUCKNOW.—This year, the Residency Buildings, which had been under the charge of the Ministry of Defence for a long time past, were retransferred to the Union Department of Archaeology. One of the imposing groups of buildings, called the Model Room, houses a number of paintings of historical importance, including portraits

of army-commanders and incidents of the upheaval of 1857. After the transfer, these paintings, which had suffered greatly through age, were chemically treated and restored to a more presentable condition. As the exhibits were overcrowded in a single room, additional enclosed space was made available by the provision of doors and windows to the open verandahs all round and the exhibits re-arranged more suitably. The improvements are in progress. See also p. 67.

EXCAVATED REMAINS, SRAVASTI, DISTRICTS GONDA-BAHRAICH.—Final touches were given to the major and minor inspection-paths, and other items of work initiated last year in connexion with the Buddha-Jayanti celebrations *(1955-56,* p. 37) were brought to completion. The laying-out of lawns and rearing of shrubs have greatly improved the setting of the site.

TEMPLES, JAGESWAR AND DANDESWAR, DISTRICT ALMORA.—Attention was paid to the upkeep of the tenth-century temples at Jageswar situated at a site famed as Daruka-vana. The executed works included the provision of stone flooring around the temples, replacement of broken roof-slabs of certain *mandapas* and provision of wire-fencing to protect the groups of temples at Jageswar proper and at Dandeswar in the neighbourhood.

TEMPLES, BAIJNATH, DISTRICT ALMORA.—The sculpture-shed situated within the compound of the temples, with a decayed wooden roof, was in a dangerous condition. The roof was replaced, and the sculptures, ranging in date from the seventh to fourteenth centuries, were re-arranged and their labels repainted.

PALACES, DEEG, DISTRICT BHARATPUR.—The inlaid floor of the marble *jhula* was repaired by the resetting of the loose inlay-pieces and replacement of the missing ones.

Madhya Pradesh

GROUP OF TEMPLES, KHAJURAHO, DISTRICT CHHATARPUR.—The works executed to the western group of temples consisted mainly of a general tidying up of the entire compound, laying of paths and provision of culverts for the drainage of water. From the hollows and crevices in the temples the age-long accumulation of dirt, causing stain on the sculptures by trickling down with rain-water, was removed.

MID-EASTERN CIRCLE

Bihar

EXCAVATED REMAINS, NALANDA, DISTRICT PATNA.— Considerable areas, both inside and outside the excavated remains, were turfed and planted with shrubberies. A *pucca* drain was constructed to take away rain-water from near Site 3. Further improvements were carried out to the pathways all over the site (pl. LXIV) in continuation of last year's work *(1955-56,* p. 37).

EXCAVATED REMAINS AT KUMRAHAR, DISTRICT PATNA.—The existing garden was improved to a great extent and the pathways properly maintained.

SHER SHAH'S TOMB, SASARAM, DISTRICT SHAHABAD.—The approach-road to the tomb was repaired The area between the tank and the gateway was provided with a barbed-wire fencing, and the environs of the tombs were turfed.

FORT, ROHTAS, DISTRICT SHAHABAD.—The decayed open terrace in front of the Baradari was repaired and the entire area returfed.

Uttar Pradesh

EXCAVATED REMAINS, SARNATH, DISTRICT VARANASI.—An extensive area in front of the main gate leading to the excavated remains was turfed. A stone platform was erected at the north-east corner of the Dhamekh Stupa for the offering of lamps by pilgrims. The courtyard of Monastery 7 was repaired.

EXCAVATED REMAINS, KUSINAGARA, DISTRICT DEORIA.—The tops of the walls of monasteries and other structures were made watertight, spoil earth was removed and all low-lying area was filled up. Pathways for visitors were provided. The metal *kalasa* on the Nirvana Stupa and the decayed portions of the ornamental brick pedestal of the colossal Dying Buddha were repaired. See also p. 64.

SHARQI MONUMENTS, JAUNPUR.—The decayed terrace of the Char-anguli mosque and the floors of its northern and southern wings were repaired.

EASTERN CIRCLE

West Bengal

TEMPLE, BAIDYAPUR, DISTRICT BURDWAN.—The special repairs to the temple included the eradication of trees which had taken deep roots in the structure, rebuilding of the damaged and collapsed brickwork, clearance of jungle, dressing up of the compound and provision of the missing wire-fencing.

SIDDHESVARA TEMPLE, BAHULARA, DISTRICT BANKURA.—A brick specimen of the *rekha* type, noted for its fine ornamental work, the temple received special repairs by way of the removal of shrubs growing into the joints, pointing of the open joints and rebuilding of the dismantled brickwork in consonance with the original. The damaged and dislocated votive *stupas* immediately outside the compound-wall were repaired and protected by a wire-fencing. Other items of work consisted of an extensive clearance of jungle, removal of debris and dressing and tidying up of the area.

GROUP OF TEMPLES, VISHNUPUR, DISTRICT BANKURA.—Besides the normal annual repairs, the re-laying of a part of the decayed floor of the Ras-mancha, pointing of the open joints of the spire of the Kalachand temple, construction of drain in and removal of debris from the compound of the latter with a view to exposing the original floor-level, re-laying of parts of the floor of the basements of the Syam-rai and Jor-bangla and repairs to some blocks of the embattled parapet of the Madan-mohan were carried out.

MINAR, PANDUA, DISTRICT HOOGHLY.—The seepage of rain-water through the roof of the topmost storey was arrested by the re-laying of the roof-concrete and repairs to the parapet-wall.

CHAR-BANGLA GROUP OF TEMPLES, BARANAGAR, DISTRICT MURSHIDABAD.------A part of the decorative cornice of the western temple was restored without an attempt to reproducing the original ornamented details.

TOMB AND MOSQUE OF MURSHID QULI KHAN, KATRA, DISTRICT MURSHIDABAD.—The overhanging brickwork of the small chambers in the north-western section surrounding the mosque was underpinned. Weeds, grass and small trees growing over the exposed wall-tops and domes were uprooted.

JATAR-DEUL, JATA, DISTRICT 24-PARGANAS.—The special repairs here consisted of the eradication of the vegetation-growth, rebuilding of damaged and salt-affected brickwork with new bricks sized to match the original in outline and provision of expanded-metal doors.

Assam

SIBDOL TEMPLE, SIBSAGAR.-Special repairs to the earthquake-damages were continued *(1955-56,* p. 38). The bulged and overhanging stones of the superstructure were dismantled on the north-western side and replaced with new stones from the Kohima quarry matching the original. Proper bond was prodded with the firm inner core by means of copper cramps and pins embedded in cement-concrete. The rendering of the *sikhara* watertight by repairs to brickwork and replastering after the removal of the decayed, and spongy plaster was completed. Due to the shortage of Kohima stones, the stock of which could not be easily replenished, the work was not completed.

VISHNUDOL, JOYSAGAR, DISTRICT SIBSAGAR.-The damaged spire was treated and ornamental brickwork reproduced after the original. The work is in progress.

RANGHAR PAVILION, JOVSAGAR, DISTRICT SIBSAGAR –The worn-out surface of the structure was plastered after the rebuilding of the missing and salt-affected brickwork. The compound was levelled up with a slope to ensure the easy flow of rain water.

SNAN-MANDIR, KHASPUR, DISTRICT CACHAR.--The erosion of the Madhura, on which the Snan-Mandir stands, was counteracted by a pitching of the river side with stones after filling in the affected portions.

Tripura

CHATURDASA-DEVATA TEMPLE, GUNAVATI GROUP OF TEMPLES, UDAIPUR—The innumerable trees, which had taken deep roots into the fabric of the temples, were cut and their roots killed by the injection of tree-killer. The areas of the temples, were cut and their roots killed by the injection of tree killer. The areas were cleared heavy jungle-growth (pl. -LXV).

Orissa

SUN TEMPLE, KONARAK, DISTRICT PURI.- Special repairs, in pursuance of the recommendations of the Konarak Temple Committee, were continued (1953-54), p.20; 1954-55, p. 35; 1955-56, p.39). The clearance of sand from the compound was completed. A gateway, choked up and entirely hidden by sand, was exposed in the eastern compound-wall and was found externally flanked by two large stone lions on either side. The doorway between the garbha-griha and mandapa, blocked up in earlier repairs, was partially uncovered by a careful removal of the top courses of the blocking masonry; two door-jambs of chlorite were found supporting an enormous lintel, also of chlorite. The old spongy and craked

lime-terracing at the top of the *vimana* was renewed at places with fresh lime-concrete mixed with cement and ironite. A large part of the northern compound-wall was provided with coping. Necessary measures were undertaken to preserve the brick temple unearthed last year. A new shed was constructed to house the *navagraha-slab* and the sculpture removed and installed on a pedestal therein.

PARASURAMESVARA TEMPLE, BHUBANESWAR, DISTRICT PURI.—The stone flagging around the temple, partly done last year *(1955-56,* p. 39), was completed.

ROCK-INSCRIPTION OF ASOKA, JAUGADA, DISTRICT GANJAM.—The main items of work consisted of the removal of vegetation and debris, general dressing up and spreading of *morum* in the precincts, replacement of the missing glass-panes in the shed over the inscription, painting of the ironwork, resetting of the dislodged bricks of the compound-wall and provision of a historical notice-board.

SOUTH-EASTERN CIRCLE

Andhra Pradesh

FORT, GOLCONDA, DISTRICT HYDERABAD.—Here the problem is mainly of the removal of jungle-growth from the fort-walls, clearance and disposal of accumulated rubbish from inside the protected area, resetting of steps leading to the *zenana* palaces, repairs to the cracked archways and general upkeep of the monuments within the fort. All these items were attended to on an extensive scale. In addition, the floor of Ambar Khana and other structures were restored. The top terrace of the Darbar hall was concreted and made watertight. The damaged northern parapet-wall of the well near Nagina Bagh was reconstructed in the original style to protect the sides from falling in. The leaky top terrace of Ramdas Kota was made watertight and its inner flooring gravelled after levelling.

Extensive deposits of debris were removed from the roof of Akkanna-Madanna and Silai Khana to relieve the load, the surface was concreted and plastered in its original form and made watertight, the ceilings were repointed with tinted mortar, the roofless wall-surfaces were made watertight and the floors of the apartments in these buildings, which had become uneven due to the accumulation of debris and rubbish, were levelled and tidied up. The ceilings of the arches were partly pointed. The roof of Bala Hissar gate was made watertight with a layer of brick-jelly in lime and an iron gate fixed at the entrance.

CHAR-MINAR, HYDERABAD.—The repairs carried out here comprised the restoration of bands in plaster-work around the pillars of the mosque and other patch-plasterings in the original manner.

FORT, WARANGAL.—Protection notice-boards were fixed at a large number of monuments. The terrace of Khush Mahal, which had become damaged and leaky, was made watertight, and cut-stone spouts were provided in the original style. Damaged steps were reset. The north-west corner pillar of the Ekasila temple, which had been out of plumb and in a dangerous position, was taken out together with the stone lintels and slabs and reset in its original position. The debris in the sanctum and *antarala* was removed to expose the old stone flooring.

THOUSAND-PILLARED TEMPLE, HANAMKONDA, DISTRICT WARANGAL.—Copper dowels were fixed in the existing grooves of the stone lintels for connecting them.

RAMAPPA TEMPLE, PALAMPET, DISTRICT WARANGAL.— Rank vegetation and shrubs on the *sikhara* and walk were completely uprooted to stop further growth and the approaches were attended to. A small garden was laid around the monument.

EXCAVATED SITE, KONDAPUR, DISTRICT MEDAK.—The existing structures, comprising *stupas, chaityas* and monastic cells, were provided with gravel-coping and the surrounding area properly sloped to drain off rain-water.

ABDUL WAHAB KHAN'S TOMB, KURNOOL.—The broken and disturbed floor-slabs were removed and replaced by new slabs matching the surrounding surface.

REMAINS OF GOPAL RAJA'S PALACE, KURNOOL.—The tops of walls were made water-tight, pointing done wherever necessary and repairs carried out to the decaying parts.

ERUGULAMMA TEMPLE, NELLORE.—The old worn-out concrete was removed and fresh concrete in combination-mortar laid to stop the leakage.

RAGHAVESVARASVAMI AND VAIDYANATHASVAMI TEMPLES, PUSHPAGIRI, DISTRICT CUDDAPAH.—Rank vegetation and debris were cleared from the compound and pointing done to the walls.

FORT, GANDIKOTA, DISTRICT CUDDAPAH.—Drains were provided to take off water from the sides, and rank vegetation was eradicated.

FORT AND GATEWAY, SIDHOUT, DISTRICT CUDDAPAH.—The brickwork was pointed in combination-mortar, tops of broken walls were made watertight and wide openings were properly filled in.

HILL-FORT, UDAYAGIRI, DISTRICT NELLORE.—The leaky terrace was made watertight by the laying of a 4-in. thick brick-jelly concrete, and wide joints, sometimes 9 in. deep, in the cut-stone masonry were filled in with combination-mortar.

KRISHNA TEMPLE, UDAYAGIRI, DISTRICT NELLORE.-The hearting of the main walls of the temple was filled in with combination-mortar.

VIRABHADRA TEMPLE, LEPAKSHI, DISTRICT ANANTAPUR—The central floor-slabs were reset and open joints filled in.

BASAVANNA TEMPLE, LEPAKSHI, DISTRICT ANANTAPUR.—A platform for the colossal bull was constructed in cut-stone facing work.

MADHAVARAYA TEMPLE, GORANTLA, DISTRICT ANANTAPUR—The terraces of the *mandapas* were made watertight.

MALLIKARJUNA TEMPLE, KAMBADURU, DISTRICT ANANTAPUR.- The broken parts of the compound-wall were made watertight and stabilized to prevent further damage. Recessed pointing to the cut-stone masonry wall was also attended to.
of the cracks and repainting of the notice-boards were attended to.

HILL-FORT AND FORTIFICATIONS AT THE FOOT OF THE HILL, GOOTY, DISTRICT ANANTAPUR.- The cavities in the merlons and guard-stands were underpinned with brickwork similar to the existing one. The fort-walls were made watertight with combination-mortar, and recessed pointing was carried out to the stone masonry.

LOWER AND UPPER FORTS, CHANDRAGIRI, DISTRICT CHITTOOR.- The cracks in the gateways were grouted with combination-mortar, and the roof of the entrance-gate was made watertight. The attached garden was re-aligned.

ROCK-CUT CAVE-TEMPLES, MOGALRAJAPURAM, DISTRICT KRISHNA,- The grouting of the cracks and repainting of the notice-boards were attended to.

BUDDHIST REMAINS, GUMMIDIDURRU, DISTRICT KRISHNA.—A drain was provided on the northern side of the pathway leading from the *stupa* to the hill-bottom.

BUDDHIST REMAINS, AMARAVATI, DISTRICT GUNTUR.—Scrub jungle, grass, etc., were cleared from the *stupa*-area. and the existing drain all round it properly sloped for the easy flow of rain-water.

OTHER MONUMENTS.—Other Buddhist sites, such as Kotturu, Sankaram, Ghantasala, Manchikallu, etc., also received attention and were cleared of all jungle. From the cells of the monasteries debris was removed and the walls were made watertight.

Bombay

FORT-WALLS, CHANDA.—The thick jungle-growth over the fort-walls was cleared for the entire length. In addition, pointing was done, and the decayed stones near the gateways and *khirkis* were replaced.

FORT, BALLARPUR, DISTRICT CHANDA.—The pathways inside the fort-walls leading to different gateways and the approach-road were gravelled.

TEMPLE, MARODA, DISTRICT CHANDA.—The *sikhara* was made watertight and the masonry reset to prevent the leakage of rain-water into the sanctum. Heavy jungle was cleared.

FORT-WALL, WAIRAGARH, AND FORT, BHANDAK, DISTRICT CHANDA.—Heavy jungle was cleared from the fort-walls and tree-killer applied to prevent its further growth.

Madhya Pradesh

TEMPLE OF SAVARI, KHAROD, DISTRICT BILASPUR.—Vegetation was cleared and the flagstones of the floor reset.

CHAITURGARH FORT, LAPHA, DISTRICT BILASPUR.—Clearing of the vegetation and grouting of cracks in lime-mortar were carried out.

MAHADEVA TEMPLE, PALI, DISTRICT BILASPUR.—The plastered dome of the *mandapa* was made watertight. The outer walls of the octagonal *mandapa,* overgrown with grass, were cleared, and the joints between the courses of the walls of the *mandapa* were provided with recessed pointing.

VAISHNAVA TEMPLE, JANJGIR, DISTRICT BILASPUR.—The back wall of the temple, somewhat tilted as a result of the sinking of the foundation, was provided with a buttress, and the branches of a *pipal-tree* spreading over the temple were cut. The gaps and open joints of the interior wall on the eastern side above the entrance-doorway was filled in with combination-mortar and repointed.

TEMPLE OF SIVA, DHAMDA, DISTRICT DRUG.—A retaining wall and steps to the platform were constructed in cut-stone masonry to protect the temple from the water of the adjoining tank when it is in its maximum water-level.

TEMPLE, GANDAI, DISTRICT DRUG.—A barbed-wire fencing on angle-iron posts was provided all round.

TEMPLE OF SITA-DEVI AND SATI PILLAR, DEORBIJIA, DISTRICT DRUG.- The temple was provided with a barbed-wire fencing and the gate and ventilator with The pillar

SOUTHERN CIRCLE

Madras

FORT ST. GEORGE, MADRAS.—All the decayed wooden windows, doors and ventilators in Block XXXVI were removed and replaced with new ones in accordance with the old designs. The dilapidated floor in the Museum-hall was renewed, and all the doors and windows were painted grey. The walls were decorated with oil-paint following the old specification.

by a concrete-floor. The silt in the channel was cleared. All the doors and windows were repainted.

ROCK-CUT CAVES, KORANGANILMUTTAM, DISTRICT NORTH ARCOT.—There was no proper drainage, with the result that rain-water collected in the open yard and the cave. A drain in reinforced cement-concrete pipe was constructed, and the undulating area of the cave and the yard was suitably sloped to drain off water.

HILL-FORT, ROYAKKOTTAI, DISTRICT SALEM.—The fallen retaining wall was reconstructed. The overhanging concrete over the battlement, the result of the sinking of earth below, was removed and replaced with new concrete. Repairs to the doors and windows were also done. The drains were cleared.

FORT AND ROCK, DINDIGUL, DISTRICT MADURAI.—The compound-wall was painted, the flight of steps repaired and stone benches provided.

GROUP OF MONUMENTS, TIRUMAYAM, DISTRICT TIRUCHIRAPPALLI.—The guns were re-erected, and patch-plastering and pointing were done to the walls.

FORT, TIRUMAYAM, DISTRICT TIRUCHIRAPPALLI.—A portion of the compound-wall was rebuilt on the old alignment.

BRIHADISVARA TEMPLE, GANGAIKONDACHOLAPURAM, DISTRICT TIRUCHIRAPPALLI.—The main *gopuram* was repaired and heaps of stone removed. A cracked beam in the Amman shrine was replaced. A wall on the eastern side was rebuilt with old stones.

BRIHADISVARA TEMPLE, TANJORE.—The leaky portions of the *vimana* of the first and second *gopurams* were grouted.

SIVAGANGA LITTLE FORT, TANJORE.—The rampart-walls were underpinned, and breaches in the walls were fenced.

Mysore

KOLARAMA TEMPLE, KOLAR.—The accumulated earth abutting the temple-wall and hiding the inscriptions was excavated, and the area was paved with stone slabs.

SOMESVARA TEMPLE, KOLAR.—The terrace of the *navaranga* and *mandapa* of the Amman shrine was made watertight.

OLD DUNGEON, FORT AND GATE, BANGALORE.—A wooden gate with iron bars was fixed to the Mysore gate. The damaged portion of the compound-wall on the northern side was cleared by the removal of debris.

HOYSALESVARA TEMPLE, HALEBID, DISTRICT HASSAN.—The leaky terrace over the *Nandi-mandapa* of the temple was made watertight.

KESAVA TEMPLE, BELUR, DISTRICT HASSAN.—The leaky terraces over the main shrine and *dalans* were rendered watertight.

GOMMATESVARA STATUE, SRAVANABELGOLA, DISTRICT HASSAN.—An ornamental wooden railing was fixed in front of the colossal statue to prevent its misuse by the public, and the coping on the parapet was redone. See also p. 64.

GROUP OF MONUMENTS, TALAKAD, DISTRICT MYSORE.—The undulated stone flooring was reset, and drains were repaired.

TEMPLES, KARKAL, DISTRICT SOUTH KANARA.—New steps with retaining walls and a suitable landing were erected in front of the Chaturmukha temple. The accreted walls over the beams at the Ananta-Padmanabha temple were removed, and a granite pillar was fixed in place of a damaged one in the *dalan*.

VIRA-NARAYANA TEMPLE, BELAVADI, DISTRICT CHIKMAGALUR.—The old dislodged steps were re-arranged, and loose sculptures were set up on pedestals.

GROUP OF MONUMENTS, HAMPI, DISTRICT BELLARY.—The debris lying all round the Narasimha-statue was removed. The fallen compound-wall on the southern end was reconstructed to prevent the entry of cattle. The top of the compound-wall was made watertight. The niches and the walls inside the Queen's Bath were plastered in a suitable colour to harmonize with the existing surface, and the leaky terrace was attended to. The Mughul plastering on the first floor of the Lotus Mahal pavilion was redone in suitably-coloured patches, and the top of the terrace was made watertight after the filling up of the crevices.

HARIHARESVARA TEMPLE, HARIHAR, DISTRICT CHITALDRUG.—The terrace of the main shrine was made watertight with a suitable combination-mortar. The parapet-walls over the terrace were plastered and the iron-gates at the entrance repaired.

MONUMENTS ON THE HILL, CHITALDRUG.—The debris of the fallen portion in the north of Ranganayaka-bagilu was completely cleared and the portion rebuilt.

JUMA MASJID AND GUMBAZ, SRIRANGAPATNA, DISTRICT MANDYA.—Whitewashing and colourwashing, painting of doors and other minor items of repairs, like patch-plastering, were done.

LARGE MASONRY ELEPHANTS AND FORT, MERCARA, DISTRICT COORG.—The massive walls were grouted, and the floors were repaired.

Kerala

GAVE, CHOVANNUR, DISTRICT TRICHUR.-—A new gate was fixed at the entrance of the cave.

GAVE, KATTAKAMPAL, DISTRICT TRICHUR.—A gate was fixed at the entrance of the cave, and repairs were done to the drains.

ST. FRANCIS CHURCH, COCHIN.—The walls on the eastern and southern sides were plastered and colourwashed. The base of the lightning-conductor was made watertight, and new expanded-metal frames were fixed to the openings.

MATTANCHERI PALACE, COCHIN.—The plastering of the exterior face of the walls, treatment of the foundation-walls with waterproof cement-mortar and replacement of the damaged and defective shutters constituted the items of work.

SOUTH-WESTERN CIRCLE

Bombay

ROCK-CUT CAVES, AJANTA, DISTRICT AURANGABAD—The pathway leading from Gave 12 to Cave 16, which had been damaged due to a heavy landslip during the last

monsoon, was reconstructed on a different alignment and at a lower level, so that the early cave *(1955-56,* p. 72), which the original path had hidden, was made easily accessible. In order to stop the erosion of the pathway leading to the bridge, which affords a good view of the waterfall, a retaining wall was constructed along it. The surface-drain over Cave 1 to Cave 4, of a length of about 105 ft., damaged due to the fall of big boulders, was also reconstructed. The cracked portion on the left side of Cave 10 was pinned and grouted for the preservation of the horseshoe *chaitya*-window.

ROCK-GUT CAVES, ELLORA, DISTRICT AURANGABAD.—Heavy leakage in Cave 19, caused by the seepage of water through the cracks in the roof, was stopped by the chiselling off of the loose portion of the rock at the top of the cave, thorough grouting of the cracks with cement and laying of cement-concrete on the roof. The Ganesa Lena group of caves containing some paintings, so long devoid of easy access, was connected with a proper pathway partly of masonry and partly rock-cut. A small bridge with railing was provided over the span of the stream. The damaged portions of the walls of the cave were restored and expanded-metal frames fitted to the openings to prevent the entry of bats. All jungle and rubbish in the little-known Jogeswari group of caves were removed and the caves made easily accessible. A small culvert was also constructed in front of Cave 15 to stop damage to the pathway leading to the Buddhist group of caves during the monsoon. The cracked and damaged pillars of Cave 26 were restored, and expanded-metal frames were fitted to Cave 10. The pits and holes in the floor of Caves 10, 16, 20 and 29 were filled in. In general, all the pathways leading to the caves were improved and direction-boards provided to guide the visitor.

Besides structural repairs, fine repairs to the sculptured panels are in progress. The Siva-Parvati panel in Cave 21 and sculptures in Cave 2 were attended to by the insertion of copper pins and by the grouting and filling of the cracks in such a manner that the beauty of the sculptures was not impaired. The *Ramayana* panel in Cave 16 is being attended to.

ROCK-CUT CAVES, AURANGABAD.—Steps were provided for easy access to the caves. The pathway leading to the second group of caves was attended to. All rank vegetation from the facades of the caves was thoroughly removed. Historical notice-boards were fixed at the foot of the hill.

BIBI-KA-MAQBARA, AURANGABAD.—The *chhajja* and cupola of the north-east *minar,* which had been damaged due to the falling off of the plaster and consequent exfoliation of the rock, were repaired. The missing portion of the *chhajja* was made good in reinforced cement-concrete and coated with a fine lime-plaster in imitation of the old one. Some decayed ornamental plaster around the cupola was removed and redone. The leaking cistern on the northern side was plastered. Some damaged red stones in the pavement were replaced.

FORT, DAULATABAD, DISTRICT AURANGABAD.-The fort-walls, which had been covered with jungle-growth, were cleared of all vegetaion and the wall flanking the main gateway (Mahakot and the second gate) was made watertight, after the removal of all loose debris, by the laying of lime-concrete mixed with cement. All woodwork in the fort, including the original wooden gateways, was given an insecticidal coat to prevent its damage by white ants.

AURANGZEB'S TOMB, KHULDABAD, DISTRICT AURANGABAD.—The grave-stone *(tawiz)* over the unostentatious grave of Aurangzeb had been split into two in the past. The parts were joined and reset in proper position. All the marble-work, including the floor and side *jali-work,* was rendered clean by the removal of specks of dirt. The rain-water from the

roof of the adjoining structure, falling into the tomb-enclosure, was diverted outside the enclosure.

FARAH BAGH PALACE, DISTRICT AHMADNAGAR.—The important but badly-damaged Nizam Shahi monument was attended to. All debris lying in and around the monument was removed and the floor made watertight by the laying of cement-concrete, thus putting a stop to the seepage of water into the foundations. The approach pathway was made good by the spreading of *morum.*

ELEPHANTA CAVES, GHARAPURI, DISTRICT KOLABA.—The gunited surface over the roof of the main cave had developed cracks and was admitting rain-water inside. The gunite-layer was, therefore, removed and the roof left exposed for some time *(1954-55,* p. 42). Weekly observations of the points of leakage were recorded for a whole year in order to study the source of leakage. On the basis of the data thus collected, it has been decided, after proper consultations, that the following steps should be taken: (1) chisel off all disintegrated portions of the rock-roof and provide adequate slopes for the drainage of water; (2) grout under pressure as many fissures as possible from the roof after boring holes by a rotary borer to varying depths; (3) lay on the roof mass-concrete of an average thickness of 6 in. with a suitable waterproofing material; and (4) excavate a deep trench separating the vertical and horizontal surfaces of the rock, so as to cut off percolation of water from the back, in case the above measures do not completely stop the leakage of water.

During the year all decayed portions of the rock were removed and the work of boring holes commenced.

ROCK-CUT CAVES, KARLA, DISTRICT POONA.—The bases of the pillars in the *chaiiya*-cave, which had been repaired in the past with masonry with an indifferent layer of plaster, were re-treated. The masonry was replaced by reinforced cement-concrete, giving a harmonious colour to the repaired portion. Loose boulders lying in the area of the caves were removed and the hill-path attended to.

Mysore

JAINA TEMPLE, NANDGAD, DISTRICT BELGAUM.—The roof of the temple was made watertight by the filling in of the cracks and cavities in the *sikhara* and by the laying of cement-concrete over the roof of the *sabha-mandapa.*

TEMPLE, KONNUR, DISTRICT BELGAUM.—The disturbed masonry of the side-walls of the temple was reset and some portions of the missing masonry renewed. The wide gaps in the masonry of the damaged *sikhara* of the side-walls were filled in with stone chips and made watertight by pointing.

GROUP OF TEMPLES, BADAMI, DISTRICT BIJAPUR.—Due to the disturbance of the masonry along the side of the Bhutanatha tank, the fabric of the temples on its east bank had been undermined. The dislodged masonry was reset and pointed. Some broken lintels were supported by angle-iron. The roof-slabs of the *sabha-mandapa* of the temple on the north bank had developed cracks. Safety measures were taken by the fixing of angle-iron on both the edges of the precariously-hanging slabs. The roof of the temple was made watertight by the filling in of the joints with stones and lime-mortar.

DURGA TEMPLE, AIHOLI, DISTRICT BIJAPUR.—The decayed mortar in the wide joints was removed and the joints treated with recessed pointing. The missing compound-wall was reconstructed and provided with a wicket-gate.

FORT, BIDAR.—All debris in the compound of the fort was removed and the monuments therein attended to. Decayed plaster was removed at places and portions replastered with suitably-coloured mortar.

MADRASA MUHAMMAD GAWAN, BIDAR.—The decayed plaster over parts of the walls was removed and a fresh plaster-coat given. Openings which admitted bats were provided with expanded-metal doors. A name-board was fixed to the monument.

BAHMANI TOMBS, ASHTUR, BIDAR.—All the loose debris and overhanging portions of the fallen dome were removed, and the extant portion of the roof was made watertight by pointing and plastering. All dangerous cracks were grouted.

WESTERN CIRCLE

Bombay

HAZIRA, DANTESWAR, DISTRICT BARODA—The monument, enshrining the remains of Qutbu'd-Din, the tutor of Salim (later on Jahangir), was found to be leaking owing to the decay of the mortar on the terrace. The ashlar-masonry in the corners of the mausoleum had bulged owing to the growth of vegetation and leakage of water. The roof was therefore rendered watertight by a fresh lime-cement mortar. The dislodged stones of the *chhajja* above the windows were reset in their original position, and the ones missing from the brackets underneath were replaced by stones after the original. The exquisitely-carved but damaged panels of the perforated window-screen were substituted by new ones.

MAHUDI GATE, DABHOI, DISTRICT BARODA.—The western flanking wall of the Mahudi gate, one of the four gateways in the fortification-wall of the fourteenth-century town of Darbhavati, was repaired by the dismantling and rebuilding of the bulged portion of the ashlar-masonry. The flight of steps leading to the top floor was also repaired.

SHAHAR-KI-MASJID, CHAMPANER, DISTRICT PANCHMAHALS.—The mosque, a fine specimen of Begadah architecture, received attention by way of making watertight the core of the north wall and reconstruction of the missing parts of the ashlar-masonry. The parapet-wall of the step-well behind the Jami' Masjid at the same place was rebuilt over a length of 40 ft. to withstand the thrust of loose earth behind it.

SIVA TEMPLE, BAVKA, DISTRICT PANCHMAHALS.—The temple had been in a dilapidated condition. Its *garbha-griha* was attended to by making the roof watertight after resetting the dislodged stones and reducing the dead load by the removal of huge stones. Further repairs are contemplated to replace in position the disjointed door-frame and sculptures in the niches of the *garbha-griha.*

JAMI' MASJID, CAMBAY, DISTRICT KAIRA—The *zenana* prayer-hall of the mosque, one of the biggest mosques in Gujarat, was provided with a stone pavement. The decayed panels of the perforated windows were replaced. The supportless overhanging pilasters were given proper support by rubble masonry. The exfoliated pillars are being replaced.

BAHLOL KHAN GHAZI'S MOSQUE, DHOLKA, DISTRICT AHMADABAD.—The mosque received attention byway of the removal of jungle-growth and the resetting of brick tiles in the pavement.

KHAN TANK, DHOLKA, DISTRICT AHMADABAD.—The tank is in need of extensive repairs. As a preliminary step, the jungle-growth on the steps was removed and

pointing of the joints carried out, after the resetting of the dislodged stones of some of the steps. Further repairs to the ramps, parapet-walls and steps will be taken in 1957-58.

MALAV TANK, DHOLKA, DISTRICT AHMADABAD.—Standing as a symbol of the sense of justice of the Chaulukya queen Mayanalladevi, the tank had suffered damage as a result of the thrust of the earth dumped behind the parapet-walls. The walls were rebuilt with an ashlar-facing and provided with coping. The repairs to the steps, inlet-sluices, etc., are in progress.

BAWA LAULJ'S MOSQUE, AHMADABAD..—The mosque was protected from flood by a further raising of the height of the protection-wall *(1954-55,* p. 43; *1955-56,* p. 48).

SAHASRA-LINGA TANK, PAT AN, DISTRICT MEHSANA__ The tank was repaired by the provision of the missing steps of the east-west channel. The garden was improved and a regular supply of water assured by the installation of a pump.

INSCRIBED ROCK, JUNAGADH, DISTRICT SORATH—The rock, bearing the famous inscriptions of Asoka, Rudradaman and Skandagupta, was safeguarded against leakage of water by the removal of decayed mortar on the roof and laying of fresh lime-cement concrete.

KHAPRA KODIA ROCK-CUT CAVES, JUNAGADH, DISTRICT SORATH.—The caves were made watertight by the provision of contour-drains after the removal of debris from the roof and plugging of holes. In the course of the excavation of the site for clearance, a terracotta sealing, assignable to the beginning of the Christian era, was found.

ROCK-CUT CAVES, TALAJA, DISTRICT GOHILWAD.—The caves were partly cleaned of rank vegetation and debris. Further work is in progress.

TEMPLE, GOP, DISTRICT HALAR—The missing ashlar-masonry in the walls of the temple was replaced, and the vaulted roof was secured by the provision of new stone lintels in place of the broken ones. The high plinth of the temple, which contains some early sculptures, has now been fully exposed to view after excavation and is being underpinned.

TEMPLE, VASAI, DISTRICT HALAR.—The temple was made approachable by the removal of vegetation and debris. The leaky roof was made watertight.

ROCK-CUT CAVES, DHANK, DISTRICT MADHYA SAURASHTRA.—The caves were opened up by excavation and removal of d6bris.

Rajasthan

GROUP OF MONUMENTS, FORT, CHITTORGARH.—The Tripolia gate, the main entrance to Rana Kumbha's palace-complex, was taken up for thorough repairs. The flanking walls were rendered watertight. The dilapidated domes of the guard-rooms in the top floor were reconstructed. The bulges in the masonry were rectified by the putting back in position of the disjointed architectural members. The cracked massive lintels are being replaced.

The Badi Pole was repaired by the pointing of the joints in the masonry and the rebuilding of the plinth of the pavilion, where guard-rooms once existed, up to its original height.

The temple of Pataleswar was thoroughly repaired by the making of the roof water-tight, removal of the debris from all round the temple, thus exposing to view the carvings of the facade and the plinth, and replacement of the missing stone pavements all round. The collapsed porch was built up on the original lines (pl. LXVI).

The temple of Jatasankar had suffered considerable damage in its plinth-portion and pavement, besides the roof. The plinth-wall was built up to its original height, and dry-rubble pitching was provided to ward off erosion. While resetting the pavement-stones, remains of subsidiary shrines were noticed and duly preserved.

The northern Sati gate, providing an entrance to the Maha-sati enclosure, was provided with proper steps and damages to the walls caused by tree-roots mended. In the same enclosure a toe-wall was built up to retain the Siva temple, the high plinth of which had been overhanging.

The temple of Adbhutanathji, known for its sculptures of the twelfth-thirteenth centuries, was rendered watertight after the resetting of the *sikhara-stones* and provision of rubble packing to the core of the southern wall and door-frame. Steps were also built up, and provision was made to drain off rain-water (pl. LXVII).

The temple of Kukkuteswar had been heavily leaking. After grouting the cracks and closing the gaps in the *sikhara,* rubble-packing was provided for the domes. The decayed concrete lime-plaster was removed and replaced by a fresh layer of the same material.

The entrance-gateway of the palace of Fatta, a three-storeyed structure used by the generals of the rulers of Chittor, was rendered watertight by rubble-packing and lime-cement concrete on the terrace. The wall-tops were treated and debris removed (pi. LXVIII).

The other monuments in the fort which are receiving attention are the Chittori Burj, Mataji-ka-Kund and Samiddheswar temple. Besides the removal of vegetation, a tilted pillared pavilion, standing precariously on the embankment of Mataji-ka-Kund, was put back in position by the resetting of the dislodged stones of the high plinth.

GROUP OF TEMPLES, BADOLI, DISTRICT CHITTORGARH.—The Sringar Chauri, a pillared pavilion in front of the Ghateswar temple, had been leaking, and some of the *sikhara-corners* had developed wide cracks and deep hollows. Each corner was treated by the resetting of the stones and grouting and pointing of the joints, making the core a homogeneous mass. A pavement was also provided. The high *sikhara* of the Ghateswar temple was made watertight after the plugging of the holes with concreted mortar and stone chips. The courtyard was excavated to provide a proper slope for rain-water. A shed was built to house the loose sculptures. The subsidiary shrines are being attended to: one of them is being repaired by the resetting of the disjointed door-frame.

FORT, KUMBHALGARH, DISTRICT UDAIPUR.—The fort is one of the most imposing ones built by Rana Kumbha. It encloses within itself several Hindu and Jaina temples, palaces, pavilions and other structures. The memorial of Prithviraja Chauhan was cleared of vegetation, and the debris in the *kund* was removed. An approach-road was provided from the Ram Pole to the memorial. The *vedi* and the Kalika-mata temple received attention by way of the resetting of the sunken pavement-stones, thus preventing the percolation of water into the foundation.

TEMPLES OF SAS AND BAHU, NAGDA, DISTRICT UDAIPUR.—The problem in the temples is one of the sinking of the foundations owing to the submergence of the plinth by the water of the adjacent tank. The stone pavement and plinth-stones have greatly sunk, resulting in the total collapse of most of the subsidiary shrines. The brick *sikhara* of one of the main temples has collapsed. This year the plinth-stones were reset in position, and a part of the pavement was re-laid. Further work at one of them has been taken up.

FORT, MANDOR, DISTRICT JODHPUR.—One of the ruined temples in the fort was cleared of debris. Its plinth was also repaired.

CENTRAL CIRCLE

Madhya Pradesh

GROUP OF MONUMENTS, SANCHI, DISTRICT RAISEN.—The work of consolidating and securing the edges of the extant patches of plaster on Stupa 1 was continued *(1955-56,* p. 50). The approach-road to the north of the Stupa was paved with flagstones for the convenience of the visitor. The western portion of the hill was fenced with barbed wire to prevent the entry of cattle within the protected area. A platform was constructed on the south-eastern periphery of Stupa 1, and the broken pieces of the Asokan pillar, hitherto lying near the south gate of the Stupa, were removed thereon for better preservation.

MAHADEVA TEMPLE, BHOJPUR, DISTRICT RAISEN.—Extensive repairs have been planned for this monument. For covering up the open *sikhara* of the temple, an important conservation-measure, heavy stone slabs were hoisted to a height of about 40 ft. from the ground-level. The work is in progress.

PILLAR OF HELIODOROS, BESNAGAR, DISTRICT BHILSA.—Land has been acquired with a view to removing the modern structures in the close vicinity of the pillar. Further work is in progress.

BIBI SAHIB'S MOSQUE, BURHANPUR, DISTRICT NIMAR.—Extensive repairs to the mosque are contemplated, notably to the surviving *minar,* of which the veneers are very badly decayed. As a preliminary measure, the *minor* was supported to a height of about 25 ft. from the base (pl. LXIX). Its foundations were also examined to determine their strength. Further work is in progress.

ROCK-CUT CAVES, BAGH, DISTRICT DHAR.—The work of clearing the debris lying between Cave 3 and Cave 4 was continued *(1955-56,* p. 50). To stop the leakage of water into the caves, it was decided that the entire thick deposit of the pulverized portion of the claystone lying on the top surface of the rock should be removed. Work on this project, of far-reaching importance, has been undertaken.

GROUP OF MONUMENTS, MANDU, DISTRICT DHAR.—The roof of the *dharmasala* attached to Hoshang Shah's tomb was rendered watertight by the provision of a fresh concreted lime-mortar terrace. Water-percolation through the roof of Dilawar Khan's mosque was stopped by the grouting of all cracks and fissures. The pitted floor of the Taveli Mahal was partially attended to.

TOMB OF MUHAMMAD GHAUS, GWALIOR.—A lawn was laid out around the monument.

Bombay

FORT, BALAPUR, DISTRICT NIMAR.—The collapsed portion of the inner fort-wall in the north-western corner was restored.

B. MONUMENTS MAINTAINED BY STATES

BOMBAY STATE

The following works were done by the Department of Archaeology, Bombay State.

VIKIA VAV, PACHHATAR, DISTRICT HALAR.—The pillars in the second porch and seats in the first porch were reset, the flooring in the first porch was refixed and the wall between the first and second porches was rebuilt.

TEMPLES, PACHHATAR, DISTRICT HALAR.—The Sun temple and Panchayatana temple were cleared of debris.

SARTANJI MANDAPA, PORBANDAR, DISTRICT SORATH.—The upper storey was conserved. A boundary-wall was constructed to protect the monument and a protection notice-board set up.

TEMPLE, MADHAVPUR, DISTRICT SORATH.—The interior of the *mandapa* was cleared of debris. The buried portion of the lower part of the *mandovara* was exposed.

KERALA STATE

The prehistoric monuments, particulary the dolmens in the High Ranges and in the old Cochin State were looked after, and steps taken to prevent their destruction and deterioration, by the Department of Archaeology, Kerala State.

MYSORE STATE

The Department of Archaeology, Mysore State, attended to the following monuments.

MONUMENTS, NAGAI, DISTRICT GULBARGA.—The surroundings of the monuments were cleaned.

TEMPLE, SEDAN, DISTRICT GULBARGA.—Arrangements were made to scrape off the thick lime and rubbish over the sculptured doorways, pillars and niches.

ISVARA TEMPLE, LOKIKERE, DISTRICT CHITALDRUG.—On the removal of a portion of the outer packing of rubble previously laid over the temple, it was noticed that its walls were intact and that they were well-carved with right-angled pilasters, basement-cornices and eaves.

BULL TEMPLE, BANGALORE.—The leaking roof was made watertight.

VENKATARAMANASWAMI TEMPLE, BANGALORE.—The lime-coating on the sculptured pillars are being scraped off.

SANTI BASTI, JINANATHAPURA, DISTRICT HASSAN.—The precincts were cleaned, the front platform paved and a compound-wall erected.

ORISSA STATE

The Department of Archaeology, Orissa State, undertook the repairs to and restoration of the Mohini temple, an early and important Devi temple at Bhubaneswar. The removal of debris brought to light sculptures belonging to the early eighth century.

RAJASTHAN STATE

The following monuments were conserved by the Department of Archaeology, Rajasthan State: palaces, Amber, District Jaipur; temples, Jawar, District Udaipur;

devals (cenotaphs) of Rao Maldeva, Mota Raja Udai Singh, Maharaja Gaj Singh and Maharaja Sur Singh, District Jodhpur; *zenana* palaces, Mandor, District Jodhpur; and Sun temple, Ranpur, District Pali.

UTTAR PRADESH STATE

The following monuments were conserved by the Department of Archaeology, Uttar Pradesh State: tomb of Latif Khan, Chakia, District Varanasi; temple of Diwan Tikait Rai, District Lucknow; tomb of Malik Muhammad Jaisi, Tahsil Amethi, District Sultanpur; temple of Jamadagni Rishi, Tehri, District Garhwal; temples of Umarnarain, Rudranath and Hariyali Devi, Rudra Prayag, District Pauri Garhwal; Vyas Gaddi, Naimisharanya, District Sitapur; tomb of Rani Lakshmi Bai, Jhansi; temple of Ramchandraji, Samthar, District Jhansi; temple of Mathuranath Dwarakanath, Mathura; Rasakhan-ki-chhatri, Gokul, District Mathura; Tulsi-chaura, Ayodhya, District Faizabad; Lala Bhagat, Kanpur; and house of Narottam Kavi, Bari, District Sitapur.

5. ARCHAEOLOGICAL CHEMISTRY

A. TREATMENT OF MONUMENTS

The Archaeological Chemist in India attended to the following monuments.

MONUMENTS, SANCHI, DISTRICT RAISEN.—As a result of intensive work continued from last year *(1955-56,* p. 53), the preservation of the remnants of plaster over the dome of Stupa 1 and of the gateways and railings was successfully carried out and moss and lichen and other vegetations satisfactorily eradicated. The problem of making the plaster on Stupa 1 waterproof also engaged attention, and the work will be taken up shortly.

EXCAVATED REMAINS NEAR KALSI, DISTRICT DEHRA DUN.—The chemical preservation of the excavated *asvamedha* remains was continued *(1955-56,* p. 53). Two of the three sites were treated and preserved, as a result of which the inscribed and uninscribed bricks, which had been rapidly deteriorating after excavation *(1953-54,* p. 10), were protected from further decay. The treatment of the third site will be completed in 1957-58.

EXCAVATED REMAINS, KUSINAGARA, DISTRICT DEORIA.—On the occasion of the Buddha Jayanti celebrations, the seated image of Buddha in the Mathakuar temple was treated and preserved and the old gilding over it restored. The stucco figures on the walls of the temple were also preserved. The colossal statue of Dying Buddha in the Mahaparinirvana Stupa was given first-aid treatment and regilded. A large-scale chemical treatment of the statue, already undertaken, will be completed shortly.

MUKTESVARA TEMPLE, BHUBANESWAR, DISTRICT PURI.—The carved *torana* and *jagamohan* of the temple, which had been left out in previous years, were subjected to general cleaning and preservation.

LINGARAJA TEMPLE, BHUBANESWAR, DISTRICT PURI.—As a result of intensive work, the entire *jagamohan* and the four sides of the *sikhara* up to the height of the *jagamohan* were preserved, leaving only the upper part of the *sikhara* still to be treated. The results of the chemical cleaning and fungicidal treatment have been highly satisfactory.

GROUP OF TEMPLES, KHAJURAHO, DISTRICT CHHATARPUR.—The work of the elimination of algal growth and other injurious accretions on the sculptures and carved surfaces of the Kandariya Mahadeva temple was continued *(1955-56,* p. 53). As a result, the sculptures are in a better state of preservation.

The following monument was attended to by the Assistant Archaeological Chemist.

GOMMATESVARA STATUE, SRAVANABELGOLA, DISTRICT HASSAN.—The Gommatesvara Research Committee *(1955-56,* p. 57) having been dissolved, the work of the preservation of the statue is now the direct responsibility of the Union Department of Archaeology- The cracks on the statue were treated with a silicaseal solution, resulting in the deposition of silica on the rock. The growth of lichen was eliminated by the application of weak ammonia and sodium pentachlorophenate. A 2-ft. length of the statue and six ringlets

on its crown were cleaned of oily accretions. An electrically-operated portable platform-hoist was put into service, so that it is now possible to reach any part of the statue without difficulty.

B. TREATMENT OF PAINTINGS

The following paintings were treated by the Archaeological Chemist.

ROCK-CUT CAVES, BAGH, DISTRICT DHAR.—Work was continued in the caves *(1955-56,* p. 53). The paintings have suffered extensive damage due to blistering and baking of the priming and the paint-layers by hot gases from the fires lit in the caves in the past; in fact, most of the paintings had been taken as irretrievably lost due to the action of smoke and heat. Systematic chemical work in Caves 2, 3, and 4, however, showed that the paintings hidden under the accretions could be re-exposed and their details brought out. Considerable investigation was conducted to evolve solvents, cleansing reagents and emulsifiers suitable for the cleaning of the paintings without causing damage to the priming or paint-layer: the removal of smoke-stains, considered a difficult problem in the past, was made possible by a judicious use of suitable solvents. Intensive work was done during the year and a considerable area of the painted surface subjected to cleaning and preservative treatment. The work will remain in progress for a considerable time.

FORT, TALBAHAT, DISTRICT JHANSI.—As a result of continued work *(1955-56,* p. 54), more than three-fourths of the work in the Narsinghji temple was completed. With the removal of oily and tarry accretions, many obscure painted scenes were exposed; their original colour was restored by suitable methods.

GROUP OF MONUMENTS, FATEHPUR SIKRI, DISTRICT AGRA.—The paintings in the Khwabgah, library and Maryam's house continued to receive attention *(1955-56,* p- 54), as a result of which the treated paintings are much brighter than the untreated ones. The greater part of the work was completed.

SUNHERI MAHAL, SIKANDARA, DISTRICT AGRA.—The progress of work on the paintings was well-maintained, and the results of the work were satisfactory. The work will be completed in 1957-58.

SULTANU'S-NISA'S TOMB, KHUSROBAGH, ALLAHABAD.—In continuation of the previous year's work *(1955-56,* p. 54), the paintings received attention. The adhesive oily layer over large parts of the painted area was successfully removed by the judicious use of organic solvents used singly or in mixtures.

'ITIMADU'D-DAULA'S TOMB, AGRA.—Continued work on the paintings on the walls and ceilings of the monument *(1955-56,* p. 54) resulted in considerable progress.

ASAR MAHAL, BIJAPUR.—The work of the removal of varnish-layer and greasy and sooty matter from over the painted surface was resumed *(1955-56,* p. 54) but had to be deferred pending structural repairs to the main hall.

MAHAKALI TEMPLE, CHANDA.—The newly-exposed wall-paintings in the temple *(1955-56,* p. 54) were subjected to elaborate cleaning and preservation with *a* view to eliminating the hard coat of lime-wash and removing other accretions. Sustained work at the monument resulted in the salvaging of a considerable painted area.

TAMBEKARWADA, BARODA.—Continued work at the monument *(1955-56,* p. 54) resulted in the completion of a greater part of the task of a systematic removal of old

varnish and other accretions from the paintings. The results are spectacular (ls.. LXXII and LXXIII), as the original brightness of colours has been restored. The work is likely to be completed in 1957-58.

OTHER MONUMENTS.—Besides the above, work in the nature of annual maintenance was done at Tambekarwada, Baroda, Mahakali temple, Chanda, Khusrobagh, Allahabad, rock-shelters, Hoshangabad, and Bania Beri cave, Pachmarhi, District Hoshangabad.

The following paintings were attended to by the Assistant Archaeological Chemist.

ROCK-CUT CAVES, AJANTA, DISTRICT AURANGABAD.—The work of the removal of shellac from over the paintings and cleaning and preserving them continued in Caves 6, 16 and 17 *{1955-56,* p. 55)', and a new method of eliminating shellac was evolved. The walls were divided into squares, the alternate ones of which were cleaned, so that the effects of the cleaning could be watched (pls.. LXX and LXXI). Subsequently, most of the untreated squares were taken up for cleaning, leaving only a very few squares untreated for comparison. The broken edges of loose plaster bearing paintings were secured with a thick solution of vinyl acetate and filleted with plaster of Paris. The work is in progress.

ROCK-CUT CAVES, ELLORA, DISTRICT AURANGABAD.—The paintings in the Ganesa Lena and Jaina groups of caves were taken up for cleaning and preservation. In the first group, though the colours in the paintings were bright, the paint-film and plaster tended to peel off and were hanging loose at many places. They had to be urgently secured. The work was taken in hand and three-fourths of it completed. In the second group too, the painted surface had to be secured before cleaning could be undertaken. The ceiling of one of the caves was found covered with soot, oil and dirt. As at Ajanta, the entire surface was divided into squares, the alternate ones taken up first for treatment.

ROCK-CUT CAVES, SITTANNAVASAL, DISTRICT TIRUCHIRAPPALLI.—The painted film in the inner caves, tending to flake off at one place as a result of efflorescence developing on it through saline action, was attended to.

VIRABHADRASVAMI TEMPLE, LEPAKSHI, DISTRICT ANANTAPUR.—The cleaning of the paintings on the ceiling of the outer verandah, previously left untreated for experimental purposes, was completed and the edges of the broken painted stuccos filleted. In the interior of the temple small experimental areas were selected and cleaned.

VADAKKUNNATHAN TEMPLE, TRICHUR.—The paintings on the outer walls of the central Sankara-Narayana shrine of the temple, covered with dust, dirt, soot and oil, were taken up for cleaning. Half the area of the painted surface was treated and preserved.

TEMPLES, TRIPRAYAR, CHEMMANTHATTA AND PERUVANAM, DISTRICT TRICHUR.—The paintings on the outer walls of the temples at these places, all with the usual dirty accretions, received treatment in the alternate squares into which the painted areas were divided.

C. TREATMENT OF ANTIQUITIES AND MUSEUM-OBJECTS

The laboratory of the Archaeological Chemist treated two hundred and fiftyone silver coins, one hundred and fiftythree copper coins and twentyone mica sheets with paintings.

The Assistant Archaeological Chemist, Museums Branch, treated upwards of five hundred objects belonging to the National Museum and Departmental museums and

consisting variously of paper manuscripts (pl. LXXIV), paintings on silk, paper and wall-plaster, textiles and objects of metal, stone and organic material like wood, leather and bone. In addition, excavated objects from Nagda and Ujjain and copper coins from Harinarayanpur were attended to.

Of special interest was the preservation of nine *patkas of Zari*--work on silk and cotton belonging to the National Museum, found in a highly-disintegrated condition, their fabric having lost all strength to support the heavy Zari-work. Fifty Tibetan and Turkish manuscripts of the Indian Museum presented a difficult problem inasmuch as they were very badly affected with fungus and insects and the pages of a large number of them were found stuck up with one another. The manuscripts were thoroughly fumigated, and the stuck-up pages were opened up very carefully—a lengthy and delicate process. Thirty fragments of Central Asian wall-paintings were preserved, strengthened and mounted.

In the Sarnath Museum black paint-marks were removed from over three hundred sculptures. Lime- and cement-incrustrations were removed from thirty sculptures. Other sculptures are receiving attention. In the Nalanda Museum, stone sculptures with similar incrustrations were treated, and a few bronzes were given minor treatments. In the newly-formed Bodh-Gaya Museum, many of the acquired sculptures were found covered with vermilion, oily matter and sometimes lime-wash. They were chemically treated before being put on show. The disfiguring black paint and coal-tar marks were removed from over an hundred sculptures in the Amaravati Museum. Seventeen large-size oil-paintings, recently acquired in the Fort St. George Museum, Madras, from the Raj Bhavan, Octacamund, requiring cleaning and removal of stains from the surface, were treated.

Eighty pictures in the Residency Buildings at Lucknow (p. 47), badly affected by insects and boring beetles, accumulated dust and stains, were treated and some provided with new frames and glasses.

D. RESEARCH

GEOCHRONOLOGY.—The Archaeological Chemist studied the environmental aspects of the microlith-bearing rock-shelters at Hoshangabad and the microlithic site discovered by him at Patan, District East Khandesh (*1954-55,* p. 59), by undertaking analytical work with a view to collecting data on the phosphate-contents and nature of the soil to establish correlation, if possible, between the microliths and the soil on which they were found. He also made considerable progress in the interpretation of the results of the analysis, petrographic examination and phosphate-determination of the soil-samples from the excavation at Rupar (*1955-56,* p. 56). Soil-samples from the excavated trenches of the microlithic site at Birbhanpur, District Burdwan (*1953-54,* p. 56; above, p. 15), were collected, studied and reported on.

EXAMINATION OF ARCHAEOLOGICAL MATERIAL.—Twentyseven specimens, variously consisting of decaying stone, metal and alloy, clay, terracotta, painted plaster, glass and glazed objects, pigments and waterproofing agents, received from various sources, were subjected to scientific investigations in the laboratory of the Archaeological Chemist. Several glass, glaze and terracotta specimens were examined for their material and technique of manufacture. Pottery from west Indian sites was specially examined for the determination of the conditions of firing and other technical aspects, such as hardness, density and microstructure. As it was desirable to investigate the effect of different

temperatures on the sherds, some experiments on colour-change by pyrometry were also conducted.

TREATMENT OF PAINTINGS.—The Archaeological Chemist continued his investigation on the techniques of the removal of oily and greasy accretions from wall-paintings *(1955-56,* p. 57). Field-observation showed that wherever single solvents had been previously used to eliminate such accretions, a hazy deposit made its appearance on the painted surface. This bloom or blanching effect was due to chalkiness, which was not the result of any chemical interaction between the priming, the paint-layer and the chemicals employed in cleaning but seemed to be attributable to the high rate of volatility of the solvents. Experiments were, therefore, undertaken with mixtures of solvents with suitable chemical and physical properties which would obviate the chalkiness, and considerable progress was made. A number of pigment-fixatives were also evolved for dealing with the problem of the flaking of the pigments and paint-layers.

The problem of softening the dry and curled-up paint-film before treatment also engaged attention. As a result of investigation reagents suitable as 'film-softener' were found.

MISCELLANEOUS.—Several proprietary products were also examined for their suitability for the eradication of vegetation and algal growth on monuments. Laboratory-tests and consultations with other expert bodies showed that such eradication was possible without any damage to the monument. Several reagents were also experimented with for use as stone-preservative. Investigations on suitable tree- and weed-killers, moss-softeners, fungicides and reagents for preventing dampness are in progress. Attention was also directed towards the problem of keeping out bats and bees and finding suitable substances to deodorize and disinfect bat-infested monuments.

The Assistant Archaeological Chemist prepared microsections of stone samples from the Brihadisvara temple, Tanjore, and the caves at Ajanta and Ellora and of pottery from the excavation at Rangpur. Chemical analyses of stones from Tanjore, Lepakshi and Sravanabelgola were also done.

The Assistant Archaeological Chemist, Museums Branch, prepared photomicrographs of precipitated pigment-material for investigating the nature of pigments used in paintings. Fifteen archaeological specimens were examined and analysed to ascertain the nature of the respective material. The possibility of utilizing latex on a large scale for the preparation of moulds out of curved and rounded objects and inscriptions is being explored.

6. ARCHITECTURAL SURVEY OF TEMPLES

The Superintendent, Temple Survey Project, North India, completed his survey of the group of temples at Khajuraho *(1955-56,* p. 58) by making an exhaustive study of the iconography of the images on these temples.

A detailed study was also made of the central Indian temples at Bhojpur, Bhilsa, Gyaraspur, Badoh, Pathari, Udaipur, Surwaya, Kadvaha, Amrol and Gwalior, all located in Madhya Pradesh and datable from the ninth to twelfth centuries. The survey covered the Paramara temples of Bijamandal at Bhilsa, Mahadeva temple at Bhojpur, Maladevi temple as Gyaraspur, Nilakanthesvara temple at Udaipur (pls. LXXV and LXXVI) and Sas Bahu temples (pl. LXXVII) and Teli-ka-Mandir in the Gwalior fort. The last temple, remarkable in many ways, has now been dated to the ninth century on the basis of the architectural design, sculptural style and palaeographical evidence.

A survey was undertaken of the Gupta temples in central India located at Sanchi, Udaigiri, Eran, Tigowa and Nachna, and a comparative study of these with the Gupta temple at Bhitargaon, District Kanpur, and the Gupta and post-Gupta temples at Nalanda and Bodh-Gaya in Bihar and at Sirpur and Rajim in Chhattisgarh is in hand.

The Superintendent, Temple Survey Project, South India, completed his survey *(1955-56,* p. 58) of the temples of the Pallavas of Kanchi, the inaugurators of stone architecture in the south between the seventh and ninth centuries. With the field-notes and drawings and photographs of the temples, the preparation of a monograph, with a general introduction and chronological descriptions of individual temples, in apt architectural terminology and with epigraphical notes, is in progress. The monograph will include both the groups of monuments, viz. the rock-cut cave-temples, numbering thirtyfive, and monolithic and masonry temples, numbering fortyfive.

The study revealed several interesting facts relating to the choice of places for the excavation of cave-temples and the mode of excavation into such hard rocks such as granite and charnockite, which the Pallava mason preferred to the softer and more tractable rocks chosen by his predecessors. While he became adept in scooping into hard rocks and in carving the exteriors of boulders into monolithic *rathas,* he had, at the same time, to make experiments in the construction of masonry temples (pls. LXXVIII-LXXXI). Like the earlier and contemporary dynasties there was a strong predilection for softer stones, such as the sandstone, but there were attempts to use the harder ones as well.

Incidentally, it was also possible to revise the current date of the painted plaster-fragments in the Kailasanatha temple at Kanchi hitherto believed to be Pallava. The remarkable discovery of two inscriptions below the painted plaster on the walls of two cells, one contemporary with the temple and the other of a later date, conclusively proved that the paintings were of a later origin.

A survey of the contemporaneous cave-temples, numbering thirty, to the north of the Pallava territory, in the Districts of Nellore, Guntur and Krishna, and to the south, in District Tiruchirappalli, made the identification and isolation of cave-temples of a purely Pallava authorship possible. Thus, a study of the cave-temples at Bhairavakonda, District Nellore, and Vijayawada and Undavalli', Districts Krishna and Guntur, all of which had been included under the Pallava group in earlier monographs, showed that they were non-Pallava in origin, style and epigraphical contents. It has, as a sequel, become necessary

to take up for study the cave-temples in other regions of south India ruled by different dynasties contemporary with the Pallavas.

In the chronological study of the masonry temples of the Pallavas, other facts also emerged. For instance, the significance of the different parts and mouldings and the meanings of the terms employed in the *Silpa-works* and in vogue among the *sthapatis* also became apparent, particularly in relation to their original functional aspects in the brick and timber prototypes, of which these stone structures were faithful replicas.

In continuation of the Pallava masonry temples, a list of temples belonging to the Pallava-Chola transitional stage and the Chola period is under preparation, as a prelude to the study of the unbroken evolutionary series from the Pallava to modern styles, through the Chola, Pandya, Vijayanagara and Nayaka periods. Likewise, the Chalukyan temples and their south Indian derivatives will be listed separately.

7. **MUSEUMS AND EXHIBITIONS**

A. NATIONAL MUSEUM, NEW DELHI

Substantial additions were made to the collection by purchase. Among the acquisitions were manuscripts of the *Tuzuk-i-Jahangiri* (pl. LXXXIX B), *Lughat-I-Alamgiri Khamsa-i-Jami, Ramayana* and *Surasagara,* the latter two illustrate, bronze images of Nataraja (pl. LXXXIV A), Manikkavachakar and Royal Saint, paintings wood carvings, jades, jewellery, textiles and coins. A start was made towards the creation of a copperplate grants collection.

A large number of gifts were received from the President, Vice-President, Prime Minister and Minister for Education, consisting of objects received by them from various countries and visiting dignitaries, one of them being a gold image of Buddha presented to the President by the President of Burma. Mon. Andrea Pallis presented, through the Indian High Commissioner in U.K., an antique brass tray embossed with the ten incarnations of Vishnu.

A gallery of wood carvings was set up, and all bronzes were re-arranged in the Darbar Hall. The Paintings Gallery was reconditioned, and some select masterpieces of Mughul, Rajasthani, Pahari and Deccani schools were put up. The work. Of preparing illuminated charts illustrating the story of Indian coins, scripts and iconography is being continued *(1955-56,* p. 59).

B. INDIAN MUSEUM, CALCUTTA

Among the notable acquisitions were a seated Buddha-image of the Mathura Kushan school from Ahichchhatra, District Bareli, on loan from the Department of Archaeology, a life-size wooden image of Buddha from Burma, presented by Shri S. Chakravarti, and terracotta figurines and beads from Mahanad, District Hooghly presented by Shri S. C. Paul, besides a number of old documents, including six *sanads* of the East India Company in the name of Shah `Alam, an old Bengali document and another in fragments bearing the seal of Muhammad Raza Khan, presented by Syed Hafizul Hasan and syed S. H. Alamqir. A terracotta Gupta sealing from Berachampa, 24-Parganas some eighteenth-century carved bricks and painted playing cards were acquired by purchase.

To the coin-cabinet were added five gold coins of the Kalachuri Gangeyadeva, five silver coins of the East India Company and one hundred and nineteen coins, of which seven were copper pieces of the Kalachuri Ratnadeva and Gangeyadeva and the rest sliver issues of the Mughuls. Some silver punch-marked coins from Berachampa and a silver Western Kshatrapa coin were purchased.

Plaster-casts of two inscribed pillars of Asoka were added to the Mauryan gallery, and a large map showing the important Stone Age sites was set up in the Prehistoric Gallery. Pre-War facilities were once more extended to the University of Calcutta for holding classes in the coin-room and galleries.

C. CENTRAL ASIAN ANTIQUITIES MUSEUM, NEW DELHI

With the treatment of a large number of paintings on wood and silk, paper drawings and stucco figurines, formerly in the reserve-collection, it was possible to display fresh exhibits in the galleries. The gallery exhibiting excavated objects, mainly pottery *(1955-56,* p. 59), continued to progress.

D. OTHER DEPARTMENTAL MUSEUMS

SARNATH MUSEUM.—The improvements in connexion with the Buddha Jayanti celebrations *(1955-56,* p. 60) were continued and effectively maintained (pl. LXXXII A). The new acquisitions consisted of sculptures discovered in the course of a canal-excavation.

NALANDA MUSEUM.—The construction of a new central hall *(1955-56,* p. 60) was completed, giving a new orientation to the existing building (pl. LXXXII B). All the heavy sculptures were removed to this hall and effectively displayed. The other rooms were also suitably re-arranged. Some copper coins from Rajgir were presented to the Museum by Shri Dalchand Bhoora of Sheoria, Madhya Pradesh.

BODH-GAYA MUSEUM.—In pursuance of the decision of the Working Committee of the Buddha Jayanti Celebrations that there should be a museum at Bodh-Gaya, a new building was constructed (pl. LXXXIII) and declared open by His Holiness the Dalai Lama on the 27th December 1956. The collection consists of stone sculptures, ranging in date from the first century B.C. to the twelfth century A.D., obtained mostly from the local Public Works Department sculpture-shed, the temple-premises and the neighbouring localities, and a few Pala bronzes obtained through the courtesy of the Collector of Gaya. Further acquisition is in progress.

KHAJURAHO MUSEUM.—An extensive programme of labelling the sculptures was pursued. An accession-register of the objects in the Museum was compiled.

HAMPI MUSEUM.—The collection of objects—sculptures, architectural pieces and memorial-stones—from all over the ruins of Vijayanagara continued, and four hundred and twentysix new pieces were added to the existing collection.

KONDAPUR MUSEUM.—A few coins and bangles from the neighbouring ancient site were added to the collection. Further improvements are in progress.

FORT ST. GEORGE MUSEUM, MADRAS.—The important acquisitions were two large-size oil-paintings graciously presented by the President to the Museum from the Rashtrapati Bhavan. The Governor of Madras kindly decided to present the cupola over the statue of Lord Cornwallis from the Raj Bhavan, and arrangements were made to shift it to the Museum. Specially-designed fluorescent lights, to illuminate the paintings from below and avoid glare, were provided.

E. OTHER MUSEUMS

ALLAHABAD MUSEUM.—The following important antiquities were acquired: a first-century Buddha-head from Bhita, District Allahabad; a railing-pillar with the figure *of a yaksha* from the same place; an eighth-century standing figure of four-armed Vishnu from Unchadiha, District Allahabad; a twelfth-century Lakshmi-Narayana from Arail,

same District; terracottas from Kausambi, Bhita, Jhusi, Sringaberapur and Lachchhagir, all in District Allahabad, and from Ahichchhatra, District Bareli; three gold Gupta coins; and two Gupta seals, from Jhusi. The archaeological wing of the Museum is under construction.

BARIPADA MUSEUM—A palaeolith from the bed of the Burabalong near Baripada, District Mayurbhanj and fifteen bronze cups from Jashipur, Mayurbhanj, were acquired.

MUSEUM AND PICTURE-GALLERY, BARODA.—A dust-proof show-case and two show-cases with suitable backgrounds were provided in the Prehistoric Gallery. A lead bar, dated A.D. 1787, found in the excavation for the foundations of a local school at Baroda, was received as a present. Wooden arches and brackets from Broach were suitably displayed.

STATE MUSEUM, BHUBANESWAR.—The following were the important acquisitions: a neolith from a re-excavated tank at Kuchai, District Mayurbhanj; eight terracotta figurines from Parahat, District Cuttack; a copper-plate grant of Dharmamahadevi of the Bhauma dynasty; fifteenth-century stone images from Dhalbhum, District Singhbhum; palm-leaf and paper manuscripts; and Rajput paintings. A few punch-marked coins, out of a hoard found at the foot of the Khandagiri-Udaigiri hills, District Puri, and two hoards of Puri-Kushan coins, respectively found at Dera, District Mayurbhanj, and Baudpur, District Balasore, were added to the coin-collection. A few prehistoric antiquities and stone and wooden sculptures were obtained from the Government Museum, Madras.

GANGA GOLDEN JUBILEE MUSEUM, BIKANER.—Twelve bronze and marble Jaina images were obtained from Amarsar, District Bikaner. See also p. 77.

PRINCE OF WALES MUSEUM, BOMBAY.—A new archaeological gallery, divided into three sections, respectively consisting of enamelled tiles pertaining to Muslim monuments in Sind and Gujarat, early terracotta figurines and south Indian wood sculptures, was thrown open to the public. Of the acquisitions, mention may be made of the Ninth Rock-edict of Asoka (pl. LXXXIX A), found at Sopara last year *(1955-56,* p. 29), a terracotta Kushan seal, a set of five Silahara copper-plates, dated in Saka 980 (A.D. 1058), of Mummuriraja, an inscribed temple-bell, dated *samvat* 1220 (A.D. 1163-64), a gold ear-pendant found with Vijayanagara coins, a commemorative silver medal issued at the siege of Srirangapatna, A.D. 1799, two copper signet-rings of the Maratha period and eight Gaekwad coin-dies of the Ahmadabad mint. The following coins were acquired through gift, purchase or exchange: eighteen silver punch-marked coins; seven medieval copper coins; one each copper Indo-Sassanian, Delhi Sultan and Gujarat Sultan coin; two copper Bahmani coins; five silver and twenty copper south Indian coins; four gold, sixtyfive silver and fifty two copper Mughul coins; a large number of silver and copper coins of the Indo-European series; and twentyfive ancient Chinese copper coins.

ASUTOSH MUSEUM OF INDIAN ART, CALCUTTA.—The following important objects were acquired by purchase or collection or through gift: terracottas from Chandraketugarh (pl. LXXXVI), a seventh-century Vishnu panel of reddish sandstone from Sanchra, District Burdwan (pl. LXXXV A); large sandstone Jaina sculptures and a miniature *sikhara-temple* in basalt, of the tenth-eleventh century; a smaller Jaina image, of the same age, from Mayta, District Midnapur; a gilt seated Tara from Nepal; medieval bronze images and illustrated palm-leaf manuscripts on temple-architecture from Orissa; two hundred and seventy coins, including silver punch-marked, cast copper, Chinese, of the tenth to twelfth centuries, Balinese, medieval Hindu and Muslim and of Soter Megas and

Mihirakula; two hundred and fifty paintings, including Rajasthani miniatures, dated Nepalese and Tibetan *tankas* of the sixteenth to eighteenth centuries, temple-hangings of the Bundi and Nathadwar schools, Jaina banners from Gujarat, and Bengal and Orissa *pals;* manuscripts, including a Rajasthani *Madhu-malati* and *Malati-Madhava,* dated A.D. 1740, and late medieval Bengali and Orissan illustrated ones.

STATE MUSEUM, GAUHATI.—The Museum acquired, among other objects, eleven neolithic implements from the Garo Hills, seven terracotta plaques, each with a human figure (pl. LXXXVII A and B), of the times of the Chutiya kings, who reigned in east Assam from the thirteenth to sixteenth centuries, and Kalachuri, Ahom, Nepalese and Chinese coins.

GWALIOR MUSEUM.—Twelve thousand copper coins, almost all of the Muslim period, were received from the Central Treasury, Gwalior, which had obtained them from the different integrated States.

STATE MUSEUM, LUCKNOW.—Among the important acquisitions were:,thirteen copper implements from Gandhauli, District Sitapur (pi. LXXXVII C and D); a life-size *yaksha* with four faces, of the second century B.C., from Bhita, District Allahabad (pi. LXXXV B); a red standstone Buddha-head from Mathura; a Gupta image of Surya from Khaira-dih, District Ballia, notable for its iconographic features; a bust of Uma-Mahesvara of *circa* seventh century from Unchgaon, District Sitapur; and a unique image of Siva as *yogin* in *varada-mudra* and with *trisula* from Lakhneswar-dih, District Ballia.

GOVERNMENT MUSEUM, MADRAS.—The collection of Stone Age tools made by Dr. Frank P. Manley from District Nellore was gifted by him to the Museum. A part of the collection had been presented by him in 1939. Three palaeoliths and four neoliths from Mayurbhanj were obtained. The coin-collection was enriched by the addition of seven copper coins of Ratnadeva II and a Gaja-simha coin of Jajalladeva, both of the Mahakosala Kalachuri dynasty, four Adivaraha-*drammas* and two Indo-British rupees. As treasure-trove acquisitions (p. 77) were obtained fortynine silver punch-marked coins from Mathur, District South Arcot, and a bronze Nataraja, of Chola origin, from Thambikkunallavankottai, District Tanjore (pl. LXXXIV B).

MUSEUM, DEPARTMENT OF ARCHAEOLOGY, MYSORE.—The antiquities recovered from the excavation at Jadigenahalli (p. 34) were displayed in the Museum of the Director of Archaeology, Mysore State. Ten gold coins, discovered at Dyavasa, were acquired for the Museum.

CENTRAL MUSEUM, NAGPUR.—A memorial-sculpture, with an inscription of *samvat* 1706 (A.D. 1649-50), from Boharda, District Nimar, and two architectural pieces from near Bharveli, District Balaghat, were acquired.

PATNA MUSEUM.—Sculptures of medieval date, all from District Darbhanga, representing Chamunda, Surya and a male and a female figure, both in *tribhanga* attitude, were received by way of gift.

PRABHAS PATAN MUSEUM.—The sculptures were arranged in a chronological order, with particular reference to the stratigraphical phases of the Somnath temple.

GOVERNMENT MUSEUM, SIMLA.—Two hundred and thirtyfour Kangra paintings by Kehar Singh, a reputed artist under the Lahore Darbar, were purchased (pl. LXXXVIII). A gold coin of Kumaragupta, a silver coin of Samantadeva and copper coins of Soter Megas, the Kushans, Toramana and Balban were acquired.

BHARAT KALA BHAVAN, VARANASI.—A clay seal from Taxila, four terracotta figurines from Ahichchhatra, a copper-plate grant of Hariraja (p. 40), beads and a copper image of Bhairava from Nepal constituted the chief acquisitions.

F. EXHIBITIONS

The Exhibition of Buddhist Art, organized by the Lalit Kala Akadami (National Academy of Art) in collaboration with the Department of Archaeology *(1955-56,* p. 3), opened in New Delhi on the 10th November 1956, and, after visiting Varanasi, Patna, Calcutta and Madras, closed in Bombay in June this year. The Exhibition comprised objects from Indian museums and from foreign countries. The rich and varied material in the Exhibition was appreciated everywhere.

On the occasion of the Buddha Jayanti celebrations all the leading museums held exhibitions of Buddhist antiquities.

In connexion with the International Campaign for Museums organized by the UNESCO, many museums in the country celebrated a Museums Week in the second week of October 1956. The Department of Archaeology helped the museums by presenting sets of photographs illustrating Indian art-objects for exhibition.

In addition, the Archaeological Section of the Indian Museum partook in an exhibition held by the Asiatic Society by lending Buddhist antiquities from its collection.

An exhibition of the recently-discovered antiquities and current archaeological activities in the country, in which archaeological organizations from all over India participated, was held in the National Museum on the occasion of the annual meeting of the Central Advisory Board of Archaeology.

8. ARCHAEOLOGICAL GARDENS

DELHI.—A total area of 5 acres was returfed at Red Fort and Safdarjang. A large number of ornamental plants of different varieties were collected, nursed and planted in groups in definite colour-schemes, and new flower-beds were prepared in all the gardens. The laying of the new garden around Abdur Rahim Khan-i-Khanan's tomb (*1955-56,* p. 65) was completed. It was, however, not possible to recover completely from the dislocation caused by the sudden shifting of the central nursery from the Central Asian Antiquities Museum premises to Humayun's tomb compound (*1955-56,* p. 65).

AGRA.—An area of over 12 acres was returfed at the Taj, Sikandara, Roman Catholic cemetery, fort, 'Itimadu'd-Daulah and Ram Bagh. New groups of shrubs were planted along both sides of the main entrance to Ram Bagh and 'Itimadu'd-Daulah, and the existing shrubberies at Ram Bagh, Taj, fort and Sikandara were overhauled and the gaps in them replanted. New varieties of seasonal flowers were introduced and a large number of ornamental plants raised. Propagational activities remained in full swing throughout the year. The glass and *chick* houses in the Taj and Khan-i-'Alam nurseries were repaired and plants and rockeries artistically re-arranged.

OTHER MONUMENTS.—The parks in the excavated remains at Sarnath, Nalanda, Kusinagara and Sravasti, laid out in connexion with the Buddha Jayanti celebrations, were maintained in proper trim and were highly appreciated by the pilgrims and other visitors. For planting the area at the top of the Nagarjuna hill at Nagarjunakonda, a provisional nursery was set up at the foot of the hill for the raising of the requisite plant-material. A beginning was made towards the conversion of the barren grounds in the compound of Shanwarwada, Poona, into a park.

The Department of Archaeology, Rajasthan State, properly maintained the gardens attached to the monuments at Jaswant Thara at Deokund, Jodhpur, Heroes' Hall at Mandor and the palaces at Amber.

9. TREASURE-TROVE

ANDHRA PRADESH—Two hundred and thirtyeight silver coins of central Indian types were found at Petluripalem, District Guntur. On examination by the Government Epigraphist for India, they turned out to be the issues of Viradaman, Vijayasena, Damajasri III, Rudrasena II, Visvasimha, Bhartridaman, Visvasena, Rudrasimha II and Yasodaman, all of the Western Kshatrapa dynasty, together with a few ones of Isvaradatta. The discovery of the coins far away from the home-province of the rulers is interesting and shows how coins far away from the home-province of the of the rulers is interesting and shows how coins travelled far and wide. Eleven gold *padma-tankas* of the Yadava dynasty were reported from Kondapur, District Adilabad. Twentyfive gold coins, dated A.D. 1425-1530, were reported from Dondaphad, District Nalgonda. Gold *varahas,* with the representation of Sita-Rama-Lakshmana, came from Garikapadu, District Guntur. A hoard of nine hundred and eightysix copper coins of the QutbShahi dynasty, dated A.D. 1657-1683, was discovered at Hamajipur, District Mahboobnagar. Twelve Mughul coins, eleven silver and one copper from Chilpur and three Mughul silver coins, dated A.D. 1685, from Kampelli, both in District Warangal, were reported.

BIHAR—A hoard of fiftytwo brass and copper utensils containing nine hundred and twenty three thousand, one hundred and seventynine silver coins of Shah 'Alam, William IV and Victoria, worth Rs. 14,00,000, was discovered in the old fort at Hathwa, District Saran.

BOMBAY---Forty silver coins of Malhar Rao Gaekwar of Baroda, issued in his fourth regnal year (A.D. 1873) and five silver coins belonging to Anand Rao Gaekwar (A.D. 1800) were found at Timba village, District Panchmahals. Some sandstone images, including a Jaina Parikara and a Tirthankara, originally belonging to some Jaina temple but later on hidden in a pit, were reported from Cambay, District Kaira. A few Jaina sculptures were also recovered from Talaja, District Gohilwad.

MADRAS.--- Fortynine silver punch-marked coins, of a common type, were discovered at Mathur, District South Arcot, and acquired for the Government Museum, Madras. A bronze Natesa of the Chola type was obtained from Thambikkunallavankottai, District Tanjore. See also p.74.

MYSORE.--- A hoard of twentyfour gold coins of a minute size, belonging to the Mysore kind Kanthiravanarasaraja Wodeyar, with the figure of Yoga-Narasimha on the observe and the legend Sri-Kanthirava in Nagari characters on the reverse, was found at Brahmipura, District Bangalore. Two hoards, respectively containing seventy and one hundred and twelve gold coins, mostly Virarai *phanams* of the Hoysala period, with a limited number of those of Harihara, Devaraya and Krishnaraya of Vijayanagara, were found in the State Huzur Treasury, Bangalore. Another hoard, discovered at Hospet, District Bellary, contained ten gold coins of the Hoyasla and Vijayanagara rulers.

RAJASTHAN.---- Marble and bronze Jaina images, twelve in number, were procured from Amarsar, District Bikaner. See also p.73.

10. OTHER IMPORTANT DISCOVERIES

PALAEOLITHIC SITE IN ANDHRA PRADESH.—Shri K. V. Soundara Rajan discovered a Lower Palaeolithic site near Karempudi on the Naguleru stream, an affluent of the Krishna, in District Guntur. The recovered palaeoliths, mostly rolled, comprised pebble tools and Abbevillean bifaces, developing, through the Acheulian, to the Levallois stage.

PREHISTORIC SITES IN BOMBAY STATE.—Dr. H. D. Sankalia discovered a stratified section on the Mula-Mutha river at Poona and a few palaeolithic tools of Series II on the surface. The gravels in the Deccan College premises at Poona continued to yield Series II tools, including excellent burins (fig. 17).

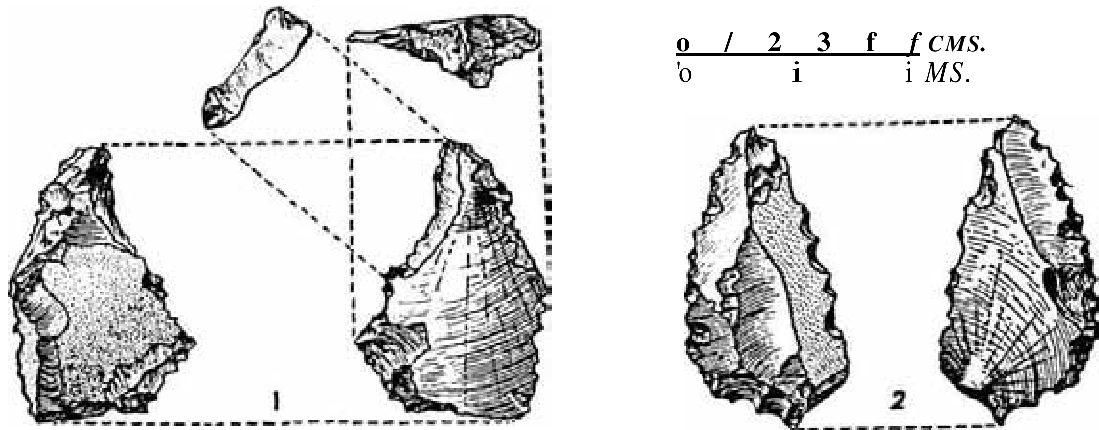


FIG. 17. *Poona: toots of Series II*

Dr. Sankalia and his party found some palaeolithic tools of Series I and II at Khed, District Poona, and tools of Series II only in stratified gravels at several sites along a stretch of 75 to 100 miles along the Bhima, surveyed by the party.

Shri S. C. Malik undertook a fresh exploration of the Bombay area and discovered new sections with all the three Series of tools.

Shri B. B. Lai and Shri M. N. Deshpande discovered palaeolithic handaxes in the gravel-conglomerate and unstratified microliths in the bed of the Bhima river at Pandharpur, District Sholapur.

PREHISTORIC SITES IN MADHYA PRADESH.—Dr. H. D. Sankalia found palaeolithic tools of Series II in gravels I, II and III at Maheswar on the Narmada, District Nimar. See also p. 11.

Shri V. S. Wakankar discovered Acheulian cleavers and discoids in the Retain valley near Neemuch, District Mandasor, a handaxe and a well-patinated discoid of quartz, along with many fluted cores and flakes, on the northern and southern slopes respectively

of the Madan Mahal hill near Jabalpur and two crude Acheulian handaxes from the northern bank of the Katni river, near Hanuman Tekri, Katni, District Jabalpur.

PALAEOLITHIC SITE IN MYSORE STATE.—Shri K. D. Banerji found tools of Series II at Taminhal on the Malaprabha, District Bijapur, the first discovery of tools of this Series in stratified deposits in Karnatak.

PALAEOLITHIC SITE IN UTTAR PRADESH.—Dr. Klaus Bruhn discovered palaeolithic tools of Series I and II near Lalitpur, District Jhansi.

MICROLITHIC SITES IN BOMBAY STATE.—A survey of the Banas in District Sabarkantha and the Saraswati in District Mehsana by Shri S. N. Chowdhary resulted in the discovery of a large number of microlithic sites.

Shri B. B. Lai and Shri M. N. Deshpande found microliths at Nimbal, District Bijapur, at Baitalwadi, District Aurangabad, at Pednagar, District Ahmadnagar, and at Ahmadnagar itself.

MICROLITHIC AND LATER SITES IN MADHYA PRADESH AND RAJASTHAN.—Shri N. R. Banerjee discovered a microlithic factory-site on a peneplain, strewn besides with nodules and flakes of quartz and chalcedony, at Kaluji-ka-Barda, District Ujjain, and a habitation-site associated with microliths and remains of historical periods at Delcha, an adjacent village. A site with a few fluted cores of chalcedony was also found by him on a low mound called Banjara Barda, near Ujjain.

Shri S. R. Rao found two microlithic sites at and near Jaora, District Ratlam, with fluted cores and blades.

Fluted chert cores were found scattered over a considerable area at Khinsvar near Nagore, District Jodhpur, by the Department of Archaeology, Rajasthan.

ROCK-SHELTERS IN MADHYA PRADESH.—Shri V. S. Wakankar discovered several rock-shelters with paintings (fig. 18) and occasionally with microlithic tools or inscriptions. The western slope of the sandstone hill near Bairagarh on the outskirts of Bhopal was seen to have several rock-shelters with paintings and microlithic tools comprising lunates and trapezes, besides fluted cores and flakes, and traces of an inscription in shell-characters.

At Chorpura, District Shivpuri, 40 miles to the south of Gwalior, more than ten rock-shelters with paintings and painted writings, of the first-second and fourteenth centuries, executed in red ochre, were found. The earlier writing, in Brahmi script, read *Dabukena karitam.*

On the outskirts of the Gwalior hill was discovered a painted rock-shelter. On a sandstone hill, 2 miles to the west of Katni, District Jabalpur, a rock-shelter with a few paintings in white pigment was located.

HARAPPAN AND PAINTED GREY WARE SITES IN PANJAB.—Dr. Y. D. Sharma found Harappan pottery at Dhogri and Madhopur, 8 miles to the north and 15 miles to the south-west respectively of Jullundur. The latter site yielded sherds of the Painted Grey Ware as well.

PROTOHISTORIC AND OTHER SITES IN BOMBAY STATE.—Shri B. B. Lai and Shri M. N. Deshpande found near Karad, in the Krishna valley, District Satara, painted pottery and microliths of the type found at sites in the Tapti-Godavari valleys.

Shri B. B. Lai and Shri M. N. Deshpande also discovered an ancient site, half a mile to the west of the Malavli Dak Bungalow, near the Buddhist caves at Karla, District Poona, containing a large number of microliths comprising blades, lunates, points and scrapers, variously of carnelian, jasper, agate and chalcedony, besides a bead of agate and a few sherds of coarse pottery of ochre-red colour.

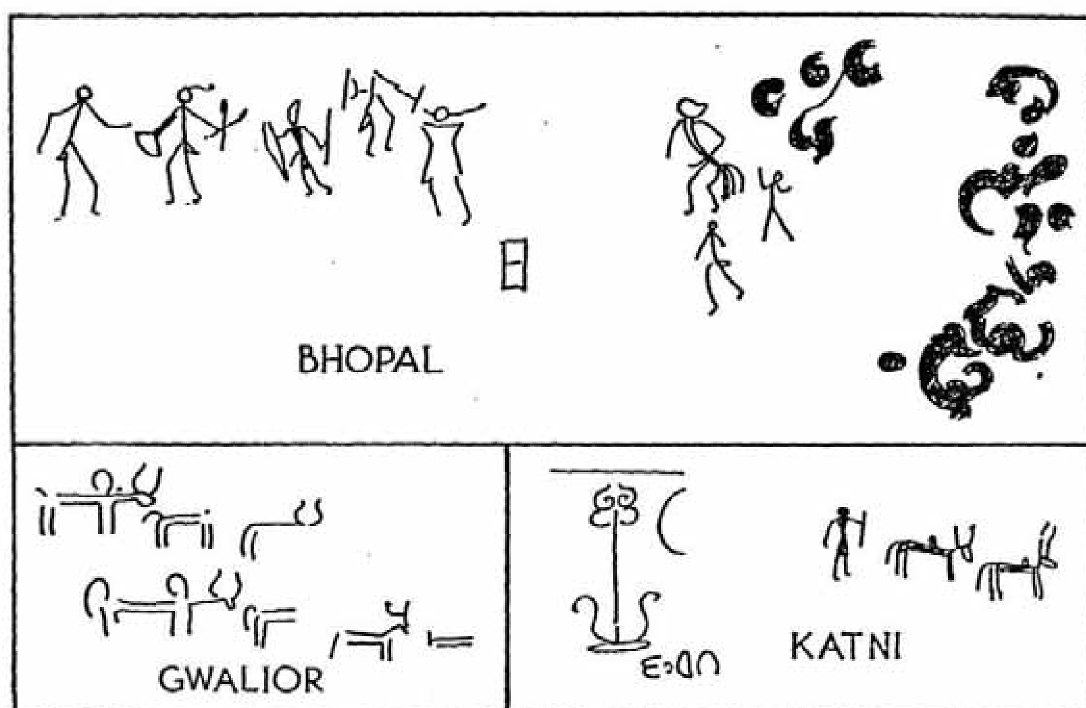


FIG. 18. *Paintings in rock-shelters in Madhya Pradesh. Not to scale*

Shri S. R. Rao discovered a microlithic occupation, characterized by microliths comprised of cores, flakes and tools, of chalcedony, agate and chert, and an inferior red-ware pottery in the form of the dish-on-stand, handled saucepan and bowl, below late Harappan deposits at Devalia on the Bhadar near Rangpur. The site also contained coarse grey and red wares associated with the Red Polished Ware and medieval glazed sherds.

Of the protohistoric sites discovered by Shri P. P. Pandya, Atkot, in District Madhya Saurashtra, yielded the dish and its stand, the bowl, the saucepan-handle and sherds with bichrome painting, while Pithadia, in the same District, had the convex-sided bowl, dish and trough.

At Modhera, District Mehsana, Shri S. N. Chowdhary discovered a few cream-slipped sherds suggesting affinities with the early levels of Prabhas Patan (p. 16).

PROTOHISTORIC AND LATER SITES IN MADHYA PRADESH.—Shri V. S. Wakankar and Shri N. R. Banerjee explored the mound at Ashta on the Parvati, a tributary of the Chambal, and found on the surface remains of the chalcolithic culture, viz., the typical black-on-red painted pottery, associated black-and-red ware and microliths, besides remains of later historical periods ranging down to the times of the Marathas.

On the eastern slopes of the Qila mound at Mandasor, Shri Wakankar found a few painted sherds, along with the black-and-red ware and a few cores and flakes.

MEGALITHIC SITES IN MADRAS STATE.—Shri K. S. Ramachandran explored the Vaigai basin in Madurai District and found four urn-burial sites, without any megalithic appendage, at Samanattam, Palangunattam, Old Vilangudi and Paravai, four habitation-sites,

at Koilmedu, Silayuman, Madakkulam and Nattamedu and a megalithic site with about a dozen stone circles at Kundalanaickenpatti—all in District Madurai. The Russet-coated Painted Ware and pottery painted with wavy lines, the latter recalling similar pottery from the megaliths in District Coimbatore and Perumbair in District Chingleput, were present at Samanattam and Nattamedu.

EARLY HISTORICAL SITES IN BOMBAY STATE.—Dr. S. B. Deo and Shri Z. D. Ansari found the Red Polished Ware on a mound near Khed, District Poona, overlooking the Bhima river. See also p. 78.

Dr. M. S. Mate discovered black-and-red ware, Red Polished Ware and Satavahana (Kolhapur) coins on the mound at Nerle, District Satara.

Shri P. P. Pandya and Shri M. A. Dhanki discovered traces of early historical settlements at Junagadh.

Shri M. A. Dhanki and Shri H. P. Shastri found the Red Polished Ware on the bank of the Hirnay, near Prabhas Patan, while Shri P. P. Pandya by himself found sites with the same Ware near Jam Kandorna, District Madhya Saurashtra.

Shri S. R. Rao found the same Ware at Patana on the Dhandhuka-Ranpur road.

EARLY HISTORICAL SITE IN PANJAB.—Dr. Y. D. Sharma discovered traces of early historical occupation on the mound at Dasuya in District Jullundur.

EARLY HISTORICAL SITES IN WEST BENGAL.—The Asutosh Museum of Indian Art, Calcutta, discovered and explored a large number of sites near Calcutta (fig. 19). At one of the sites, Harinarayanpur, near Diamond Harbour, 24-Parganas, were found cast copper coins, the Rouletted Ware and terracotta figurines. Surface-exploration in Chandraketugarh at Berachampa (see also p. 29) yielded an inscribed fragment of grey sandstone with Mauryan polish, sherds of the Northern Black Polished Ware and the Rouletted Ware, silver punch-marked coins and terracotta tablets and figurines, some of them of remarkable workmanship. At Atghara, in 24-Parganas, Shri P. C. Das Gupta found objects analogous to those from the above sites and Tamluk, such as terracottas, rouletted and grey sherds and cast copper coins. A unique gold coin of 6·25 grains was found at Tamluk. Terracotta figurines of Kushan, Gupta and early medieval times were found at Bahiri in Midnapur District.

Harinarayanpur, mentioned above, was also explored by Shrimati D. Mitra, who found the knobbed vessel and dish in grey ware and the bottle-necked sprinkler, lipped lid and lid with a central depression in red ware, besides sherds of black ware. Among other objects were cast copper coins (pl. XC A), Sunga and Kushan terracotta figurines (pl. XG B) and beads.

EARLY COINS IN BOMBAY STATE.—Six silver coins found at Mhasorne, District Satara, turned out, on examination by Dr. S. B. Deo, to belong to the Traikutaka dynasty.

BUDDHIST REMAINS IN ANDHRA PRADESH.—The basement of an old construction and the portion of a pillar resembling those of the Amaravati Stupa were unearthed at Tekkellapadu, District Krishna. Two Buddhist images were discovered at Alluru in the same District. Two earthen pots, covered by metal lids, were brought to light from below the floor of the eastern monastic cells in Gurubhaktulakonda at Ramatirtham, District Visakhapatnam.

BUDDHA-IMAGE IN SWEDEN.—The discovery of a stone Buddha-image in an island near Stockholm is noteworthy. The figure, executed in late and debased Gandhara style, is seated in *vajra-paryankasana* on a *visva-padma,* its right hand in *varada-mudra* and left holding the end of *sanghati.*

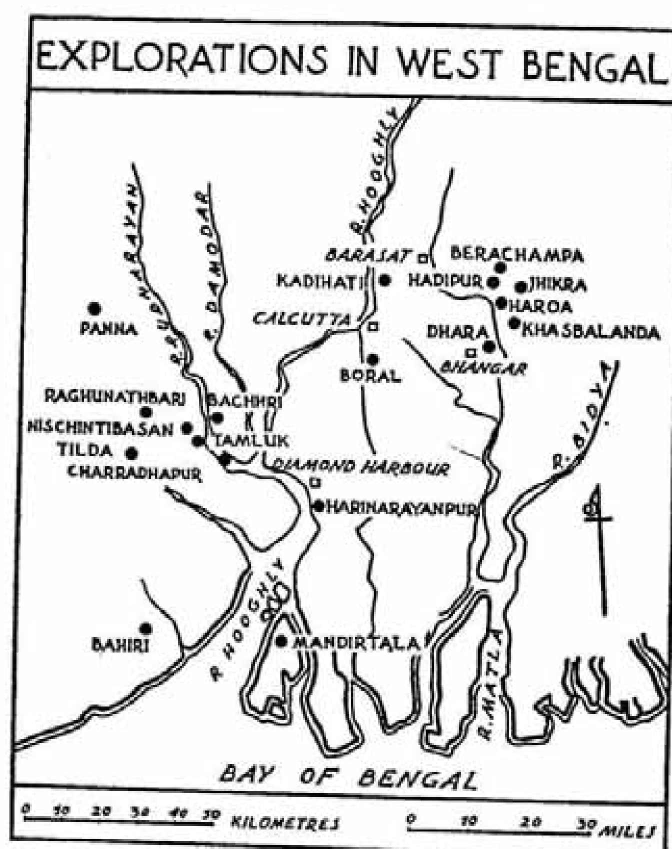


FIG. 19

EARLY TEMPLES IN BOMBAY STATE.—Shri M. A. Dhanki and Shri H. P. Shastri discovered small pre-Chalukyan temples at Navdra and Savni in District Sorath.

Shri K. R. Kapre discovered the remains of brick temples at Harni and Parinche in District Poona, dating from *circa* seventh century. Both these places are mentioned in the Jejuri plates of the Chalukya Vinayaditya.

MEDIEVAL SCULPTURES IN ASSAM STATE.—The officers of the State Museum, Gauhati, found miscellaneous tenth-eleventh century sculptures at Devasthan, District Nowgong, and Phulbari, Garo Hills.

MEDIEVAL SCULPTURES IN HIMACHAL PRADESH.—Dr. Y. D. Sharma discovered some loose medieval sculptures in the neighbourhood of a modern Siva temple, situated near a series of caverns with stalactite in District Sirmur of Himachal Pradesh, opposite the ruined temple at Haripur in District Dehra Dun (p. 83).

MEDIEVAL TEMPLES IN MYSORE.—Dr. M. Seshadri discovered the following temples: a group of five Isvara temples, at Begur, District Bangalore, of which the Nagesvara was the most important; Isvara temple at Hirenallur, Narasimha temple at Baggavalli, Isvara temple at Hanni and Virupaksha temple at Bukkambudi—all in District Chikmagalur; Kallesvara temple at Sogi, District Bellary; and Lakshmi-Narayana temple at Honnavalli,

Basti at Karadalu, Isvara temple at Balavanerlu and Venu-Gopala temple at Karodi—all in District Tumkur.

MISCELLANEOUS SCULPTURES IN RAJASTHAN.—The Department of Archaeology, Rajasthan, discovered the following: Gupta and early medieval sculptures at Jagat and Kejad, District Udaipur, and at Hathai and Amihar, District Dungarpur; two late Gupta Jaina sculptures, eighth-century sculptured slabs on the walls in step-wells, houses, etc., and a fourteenth-century inscription at Narhad and an eighth-century inscription at Baya—both in District Jaipur; and a life-size image of the Jaina Tirthankara Vimalanatha at Khinvsar, District Jodhpur.

MEDIEVAL REMAINS AND SCULPTURES IN UTTAR PRADESH.—Dr. Y. D. Sharma discovered medieval remains in the form of a stone plinth of a temple and brick debris near Haripur, on the left bank of the Tons, in District Dehra Dun. In the same District he found similar remains at Barwa, on the bank of the Mothi Nadi, about 12 miles south-east of Kalsi, and some medieval sculptures near Kata Patthar and at Prithipur.

BRONZE SCULPTURE IN MADRAS STATE.—Shri P. R. Srinivasan found a remarkable bronze, 2½ ft. high, representing Trivikrama, of the early tenth century in an insignificant village near Coimbatore.

MEDIEVAL REMAINS IN ANDHRA PRADESH.—A large quantity of glazed stoneware was recovered from Rani Mahal in Chandragiri fort, District Chittoor. Most of the fragments were of the Mughul period, showing typical floral designs in blue picked up with white.

II. PUBLICATIONS

A. DEPARTMENTAL PUBLICATIONS

ANCIENT INDIA.—Number 12 (1956) of the journal was published. Number 13 the press and is likely to be available by September 1957.

MEMORS OF THE ARCHAEOLOGICAL SURVEY OF INDIA.—Number 72, *Inscriptions of* Chamba, by B.Ch. Chhabra was published. Due to some technical difficulties in the preparation of colour-illustrations, the publication of the next number, *The Great Temple at Tanjore,* by T. N. Ramachandran, has been delayed.

GUIDE-BOOKS.—*Sravasti,* by M. Venkataramayya, *Kusinagara,* by D. R. Patil, and *Ajanta,* by Debala Mitra, were published and *Agra Fort,* by Mohd. Ashraf Husain, and *Sarnath,* by V. S. Agrawala, were reprinted. The reprinting of *Khajuraho,* by B. L. Dhama and S. C. Chandra, and the printing of *Sanchi,* by Debala Mitra, are in progress. The printing of a Hindi version of *Sarnath,* by V. S. Agrawala, and Hindi translations of *Kusinagara, Sravasti* and *Rajgir,* prepared by K. N. Sastri, are ready for the press.

CORPUS INSCRIPTIONUM INDICARUM.—Part ii of volume II, *Bharhut Inscriptions,* edited by H. Liiders and revised by E. Waldschmidt, and volume VI, *Inscriptions of the Vakatakas,* edited by V. V. Mirashi, are being made ready for the press.

EPIGRAPHIA INDICA.- Parts iii (July 1953), iv (October 1953) and v (January 1954) of volume XXX were published. Parts vi (April 1954) and vii (July 1954) of the same volume and parts i (January 1955) and ii (April 1955) of volume XXXI were passed for printing. Parts viii (Indexes) of volumes XXVIII (October 1950), XXIX (October 1952) and XXX (October 1954) and parts iii (July 1955), iv (October 1955), v (January 1956), vi (April 1956) and vii (July 1956) of volume XXXI are in the proof-stage, while matter for parts i (January 1957), ii (April 1957) and iii (July 1957) of volume XXXII is with the press.

EPIGRAPHIA INDICA.- ARABIC AND PERSIAN SUPPLEMENT.- The issues for 1951 and 1952 and for 1953 and 1954 were published. Matter for the issue for 1955 and 1956 is with the press.

ANNUAL REPORT ON INDIAN EPIGRAPHY.- The Reports for 1949-50, 1950-51 and 1951-52 were passed for printing, while those for 1954-55 and 1955-56 were sent to the press.

SOUTH INDIAN INSCRIPTIONS.- The preparation of volumes XV (Bombay-Karnatak Inscriptions, part ii), XVI (Telugu inscriptions of the Kings of Vijayanagara) and XVII (Inscriptions copies in 1903-04) was completed, while volumes XVIII (Inscriptions of Parakesarivarman) and XIX (Bombay-Karnatak Inscriptions, part iii) are nearing completion.

PICTURE-POSTCARDS.- The sets of Chittor, Ellora, Aurangabad, Ajanta (both colour and monochrome) and Sanchi were reprinted. The following new sets will be shortly available: Mandu, Khajuraho, Pattadakal, Badami, Aiholi and Bhubaneswar.

B. OTHER PUBLICATIONS

EPIGRAPHIA CARNATICA.—Volume XVI (Tumkur Supplement) was published by the Department of Archaeology, Mysore State. The printing of the Kolar Supplement is in progress.

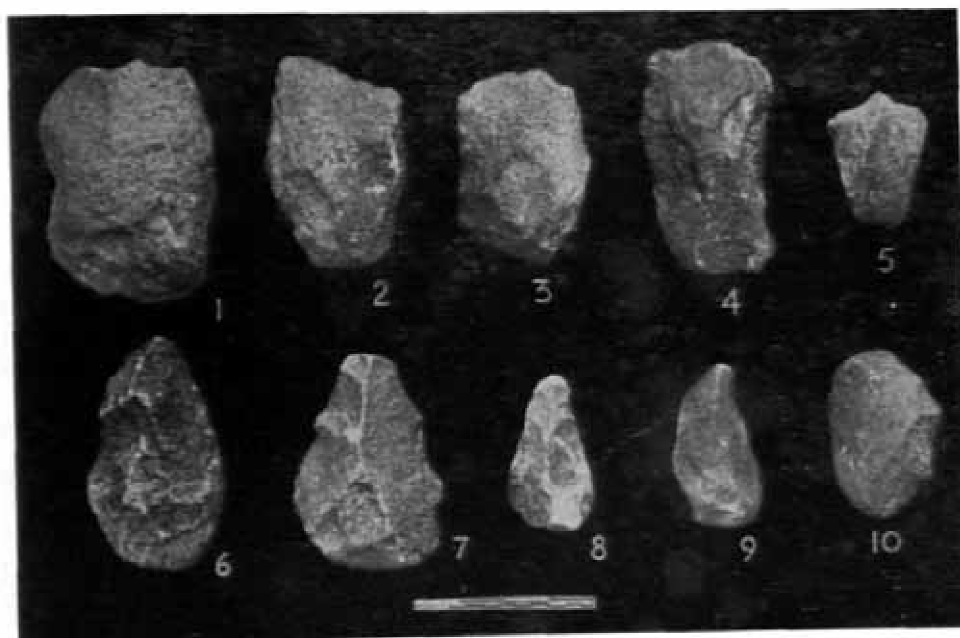
GUIDE-BOOKS.—The National Museum published a guide-book to its galleries.

The Department of Archaeology, Mysore State, published a revised edition of a guidebook to Sravanabelgola in English, Hindi and Kannada. Hindi translations of guidebooks to Belur, Halebid and Srirangapatna are in the press.

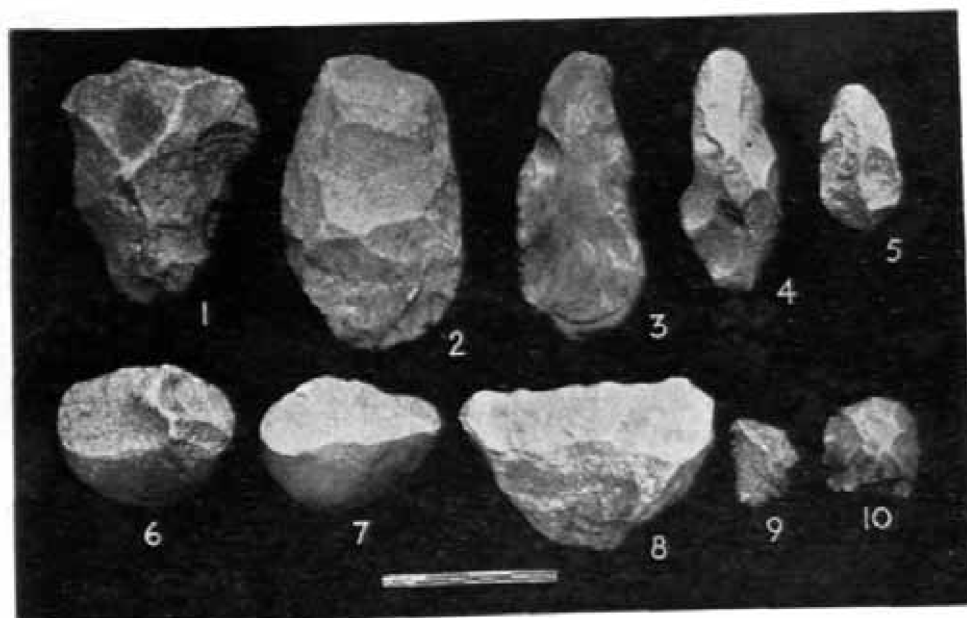
PICTURE-POSTCARDS.—The National Museum published two sets of picture-postcards of its sculptures.

The Department of Archaeology, Rajasthan State, published a dozen picture-postcards of sculptures in the museums in its charge.

The State Museum, Gauhati, published a set of twelve postcards of selected sculptures of Assam.

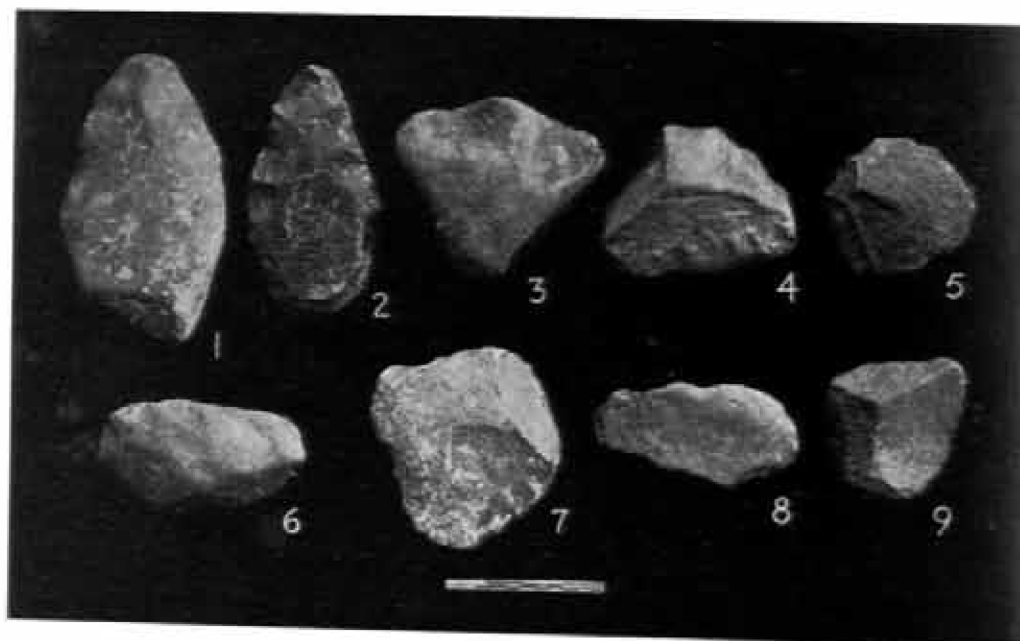


A

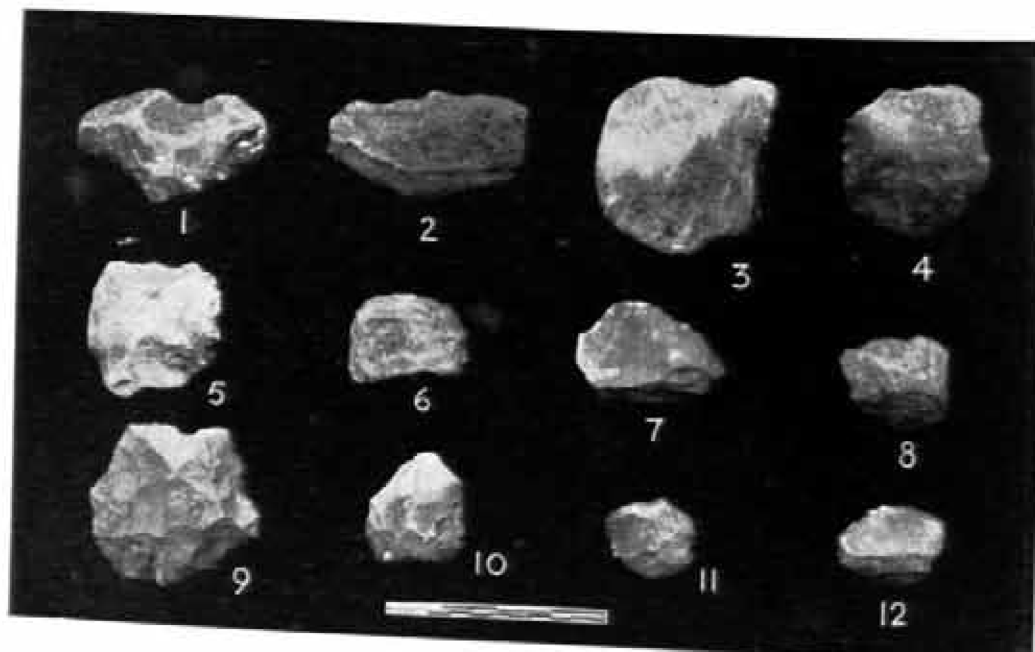


B

Sonita: palaeoliths of Series I. *See page 5*

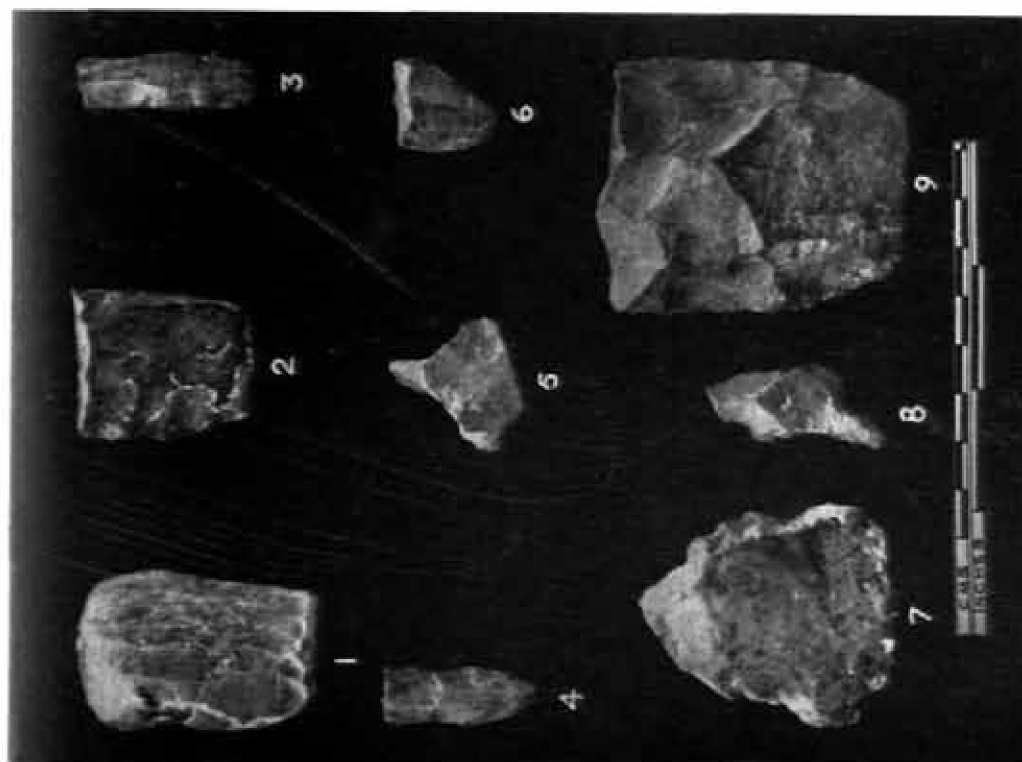


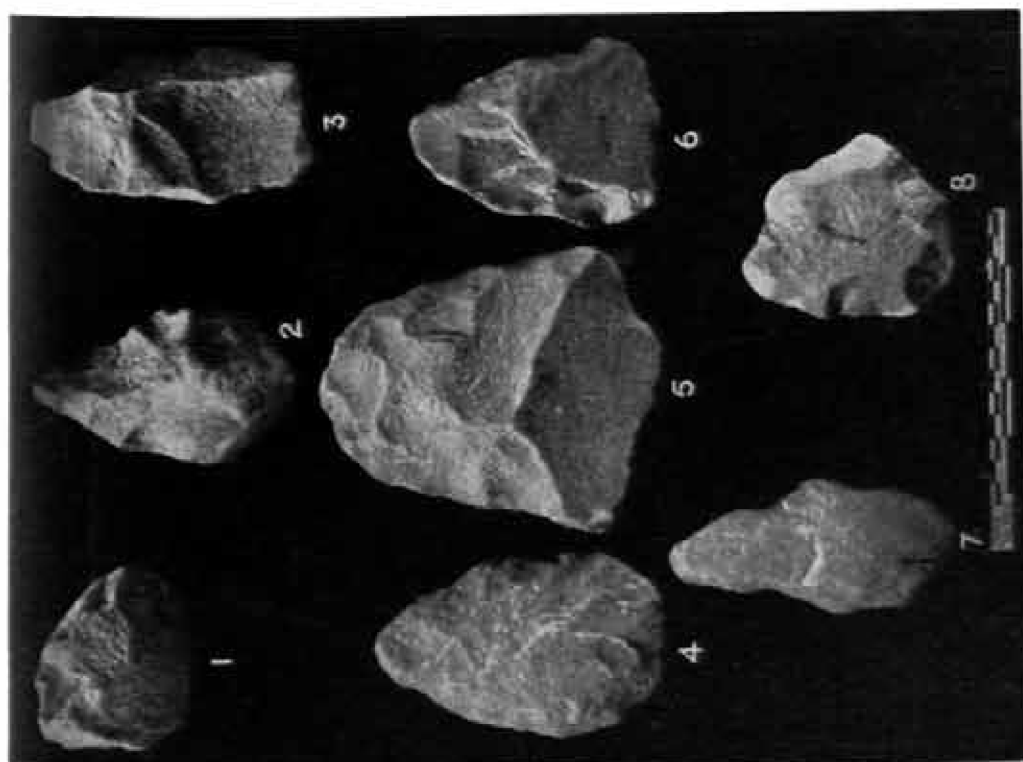
A



B

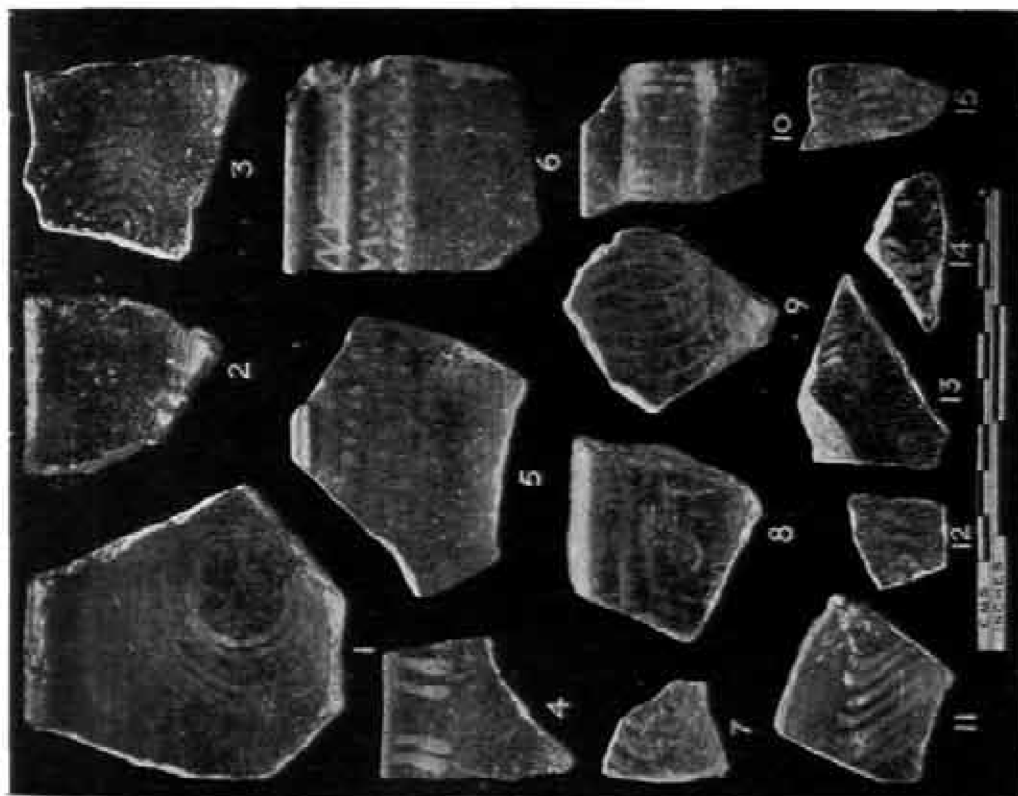
A, *Sonita: palaeoliths of Series I;* B, *Sonita and Bhainsrorgarh: palaeoliths of Series II.* *See page 5*



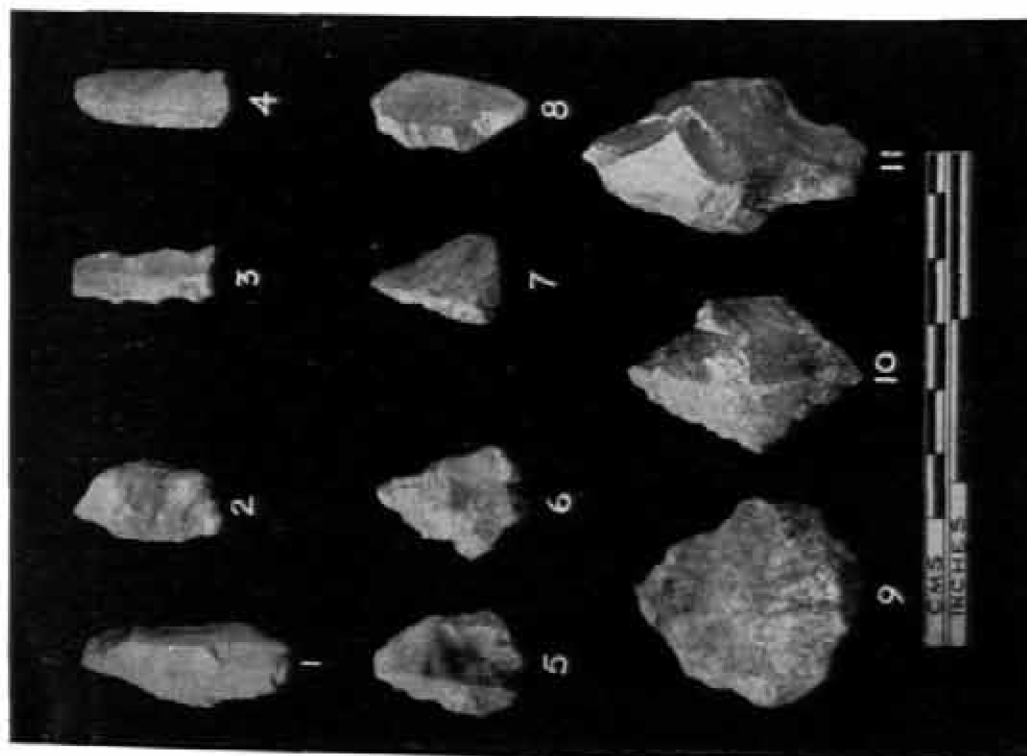


A B

Rajasthan: palaeoliths, microliths and fluted cores, from different sites. *See page 8*

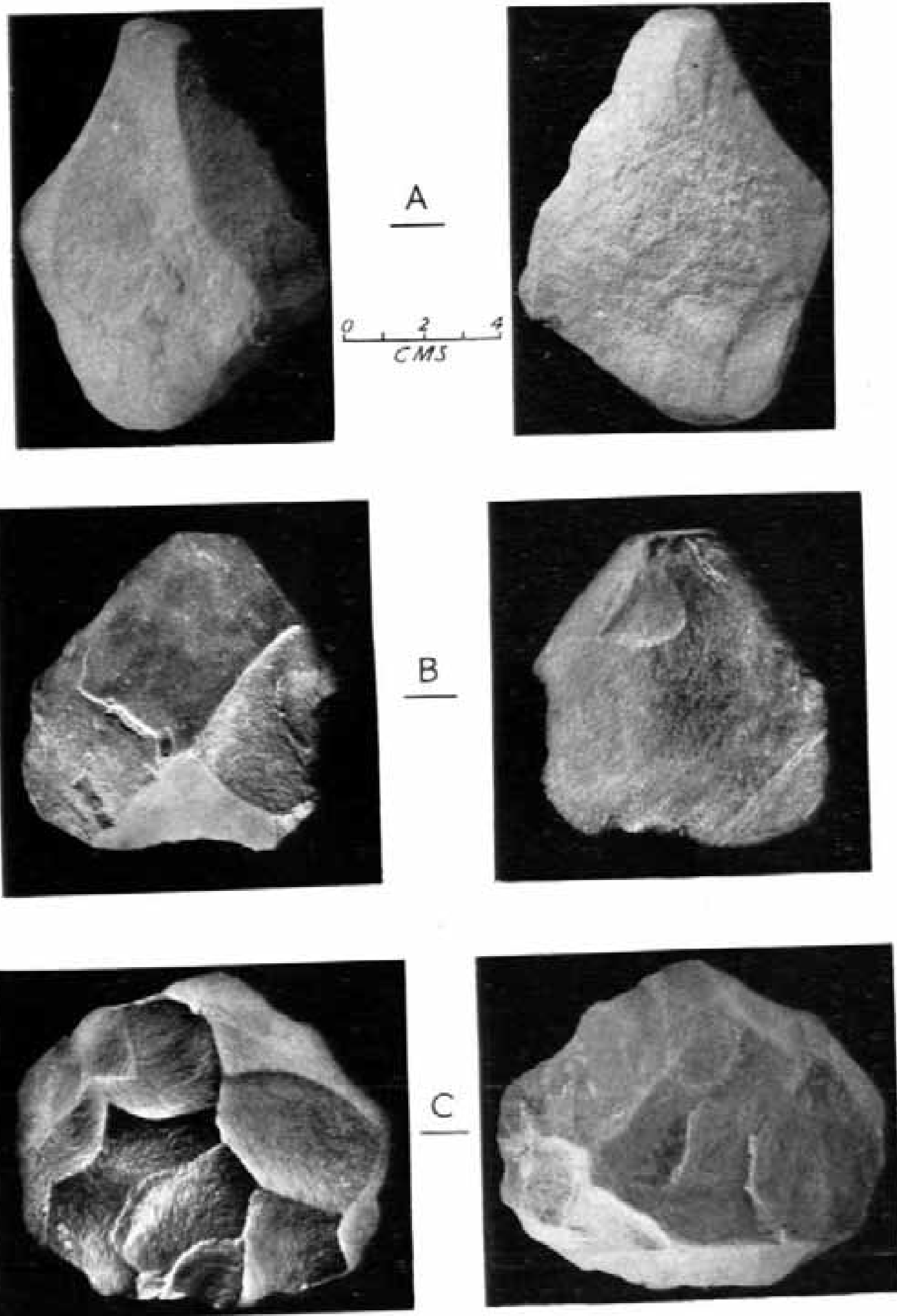


B



A

Rajasthan: A, *microliths, and* B, *black-and-red, red and black pottery, from different sites. See page* [illegible]



Mandasor: palaeoliths of Series I. See page 11



A



B



C

Bilawadi: A, *general view of the mound*; B *and* C, *terracotta figurines* [illegible]

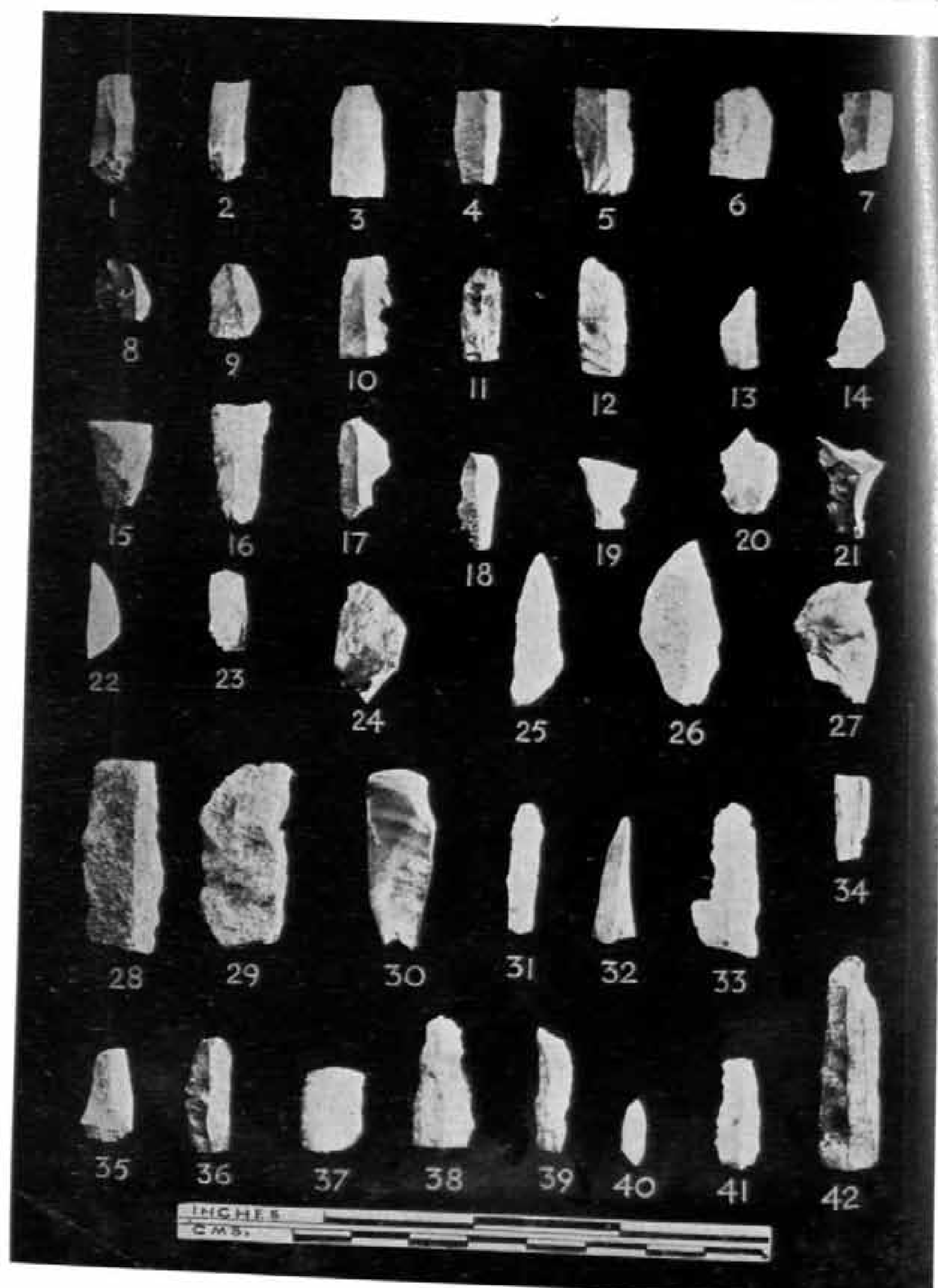


B



A

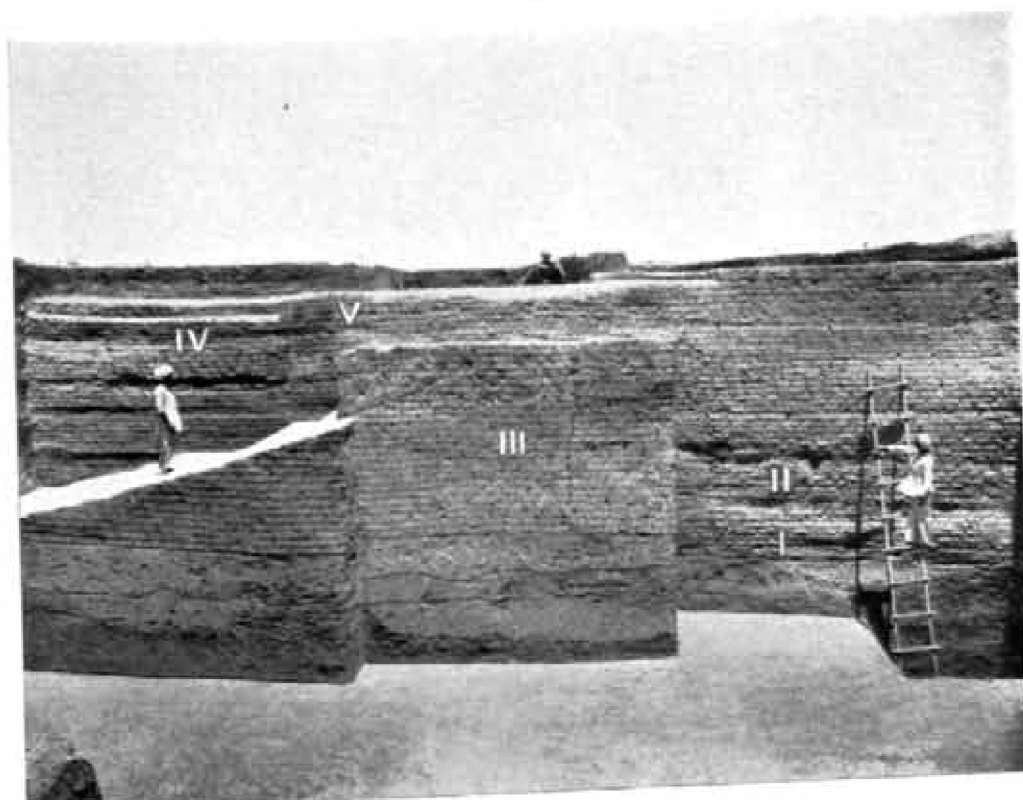
Ronp: paintings in rock-shelters. *See page 14*



Lekhania: microliths. See page 15

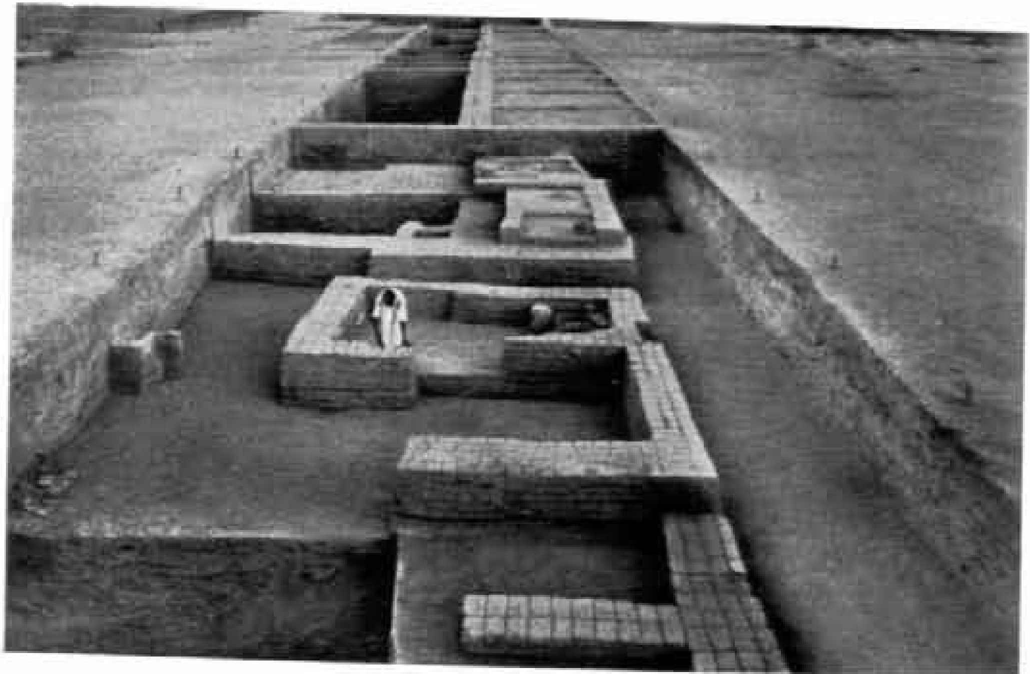


A



B

Lothal: A, *clay fillings with structures above (scale of feet);* B, *mud-brick platforms of different Periods.* *See page 15*



A

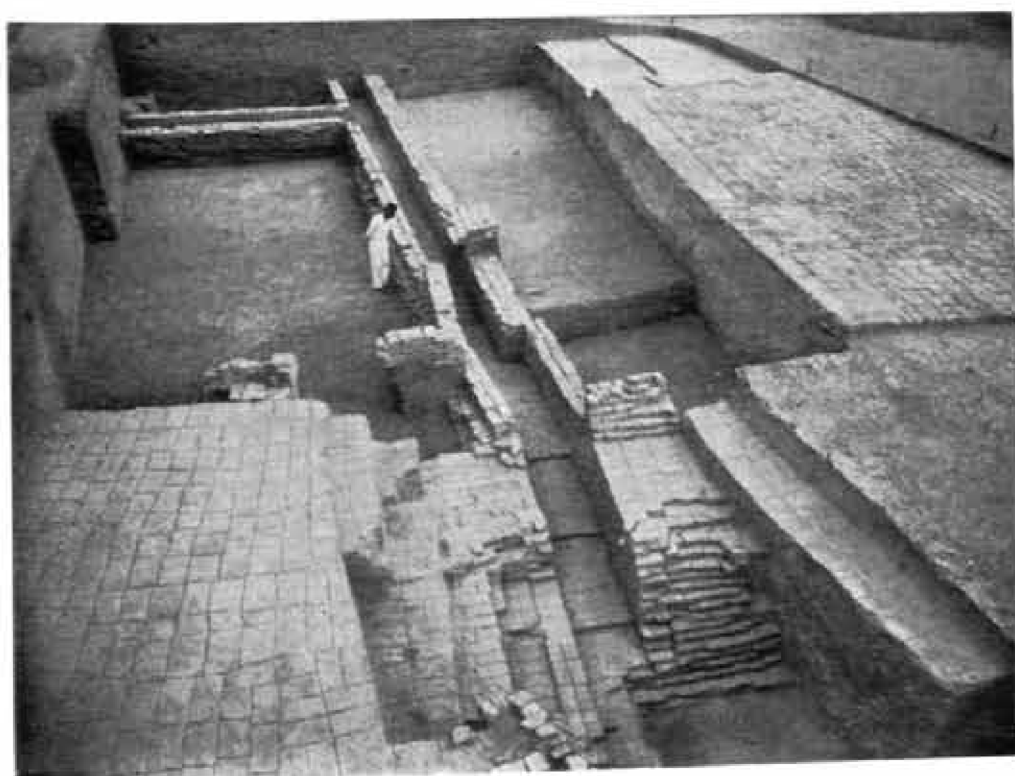


B

Lothal: A, *row of houses;* B, *brick pavement between houses (scale of feet)*. *See page 15*



A



B

Lothal: interconnected brick drains (scales of feet). *See page 15*

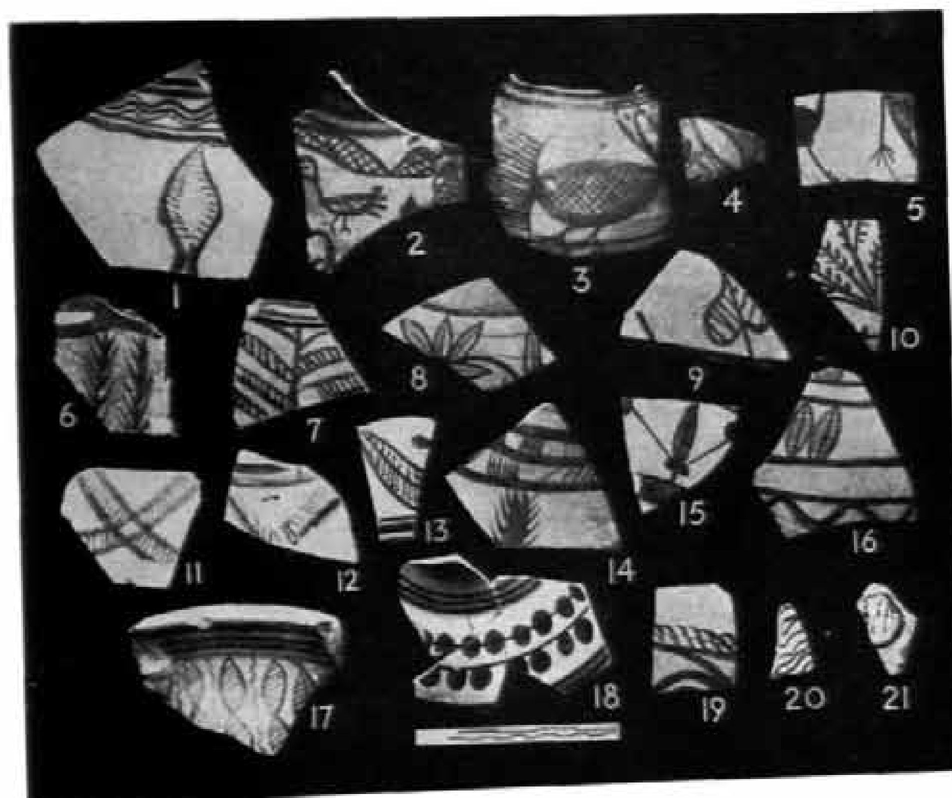


A



B

Lothal: A, *circular enclosures inside a house (scale of foot and inches)*; B, *brick platforms with altars in the background.* *See page 15*



A



B

Lothal: painted pottery (B, scale of inches). *See page 15*



A



B



C



D



E



F

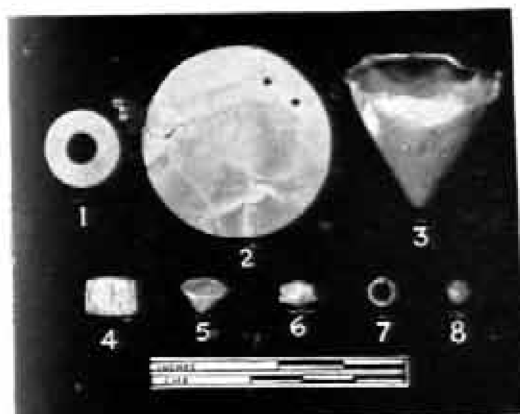


G

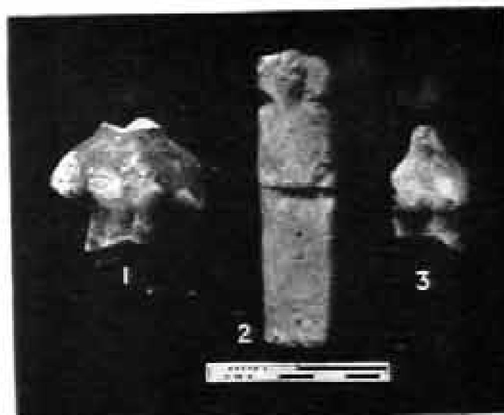


H

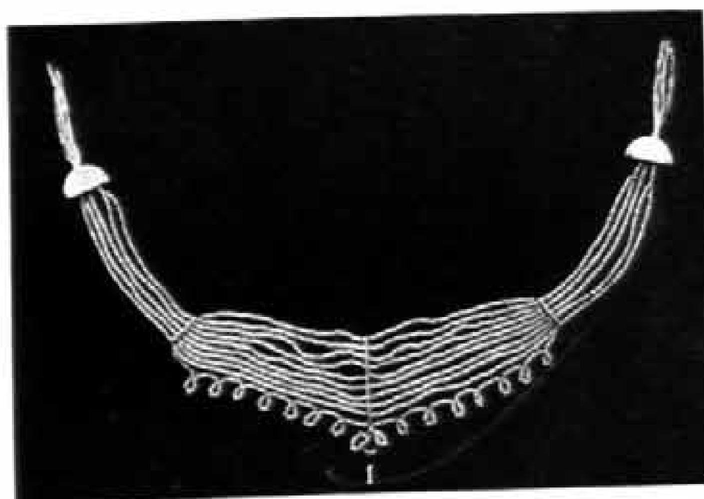
Lothal: seals (slightly enlarged). See page 15



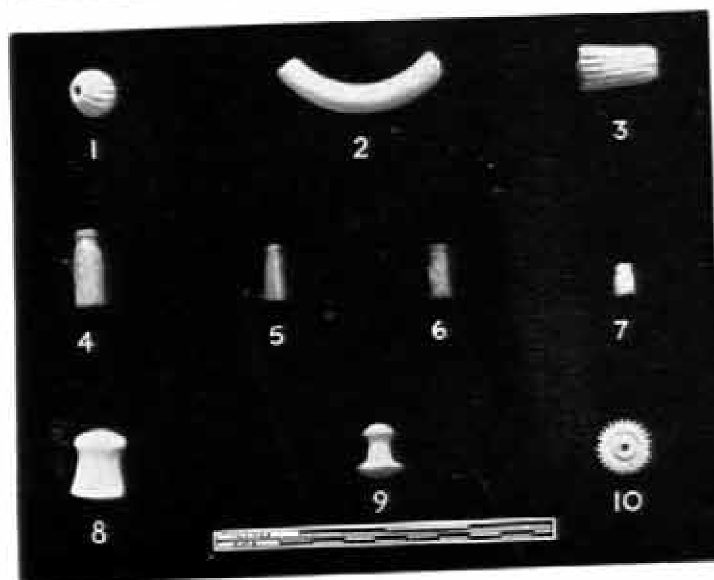
A



B

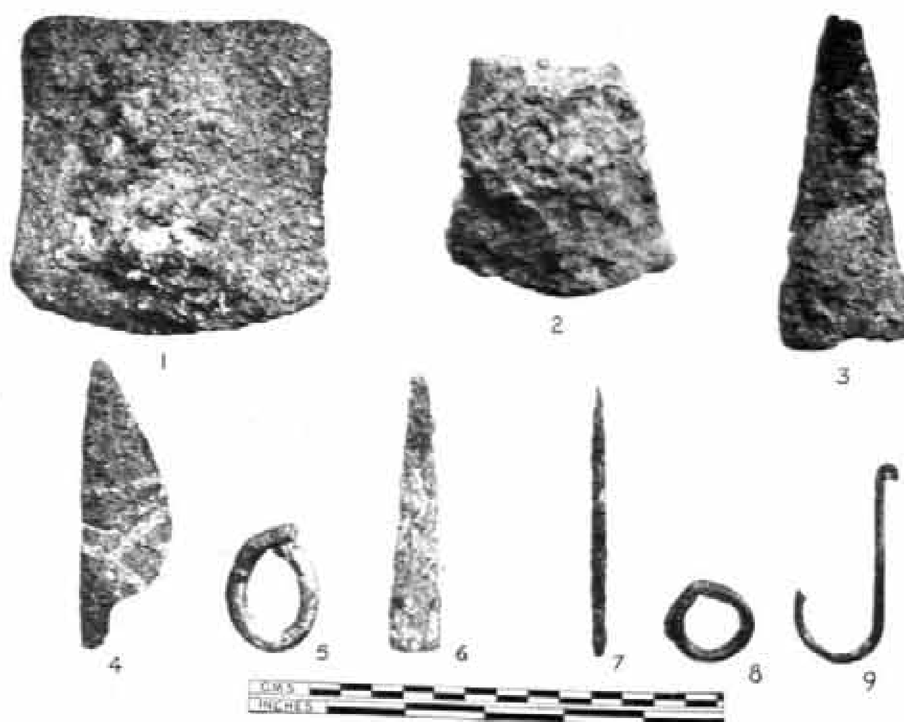


C

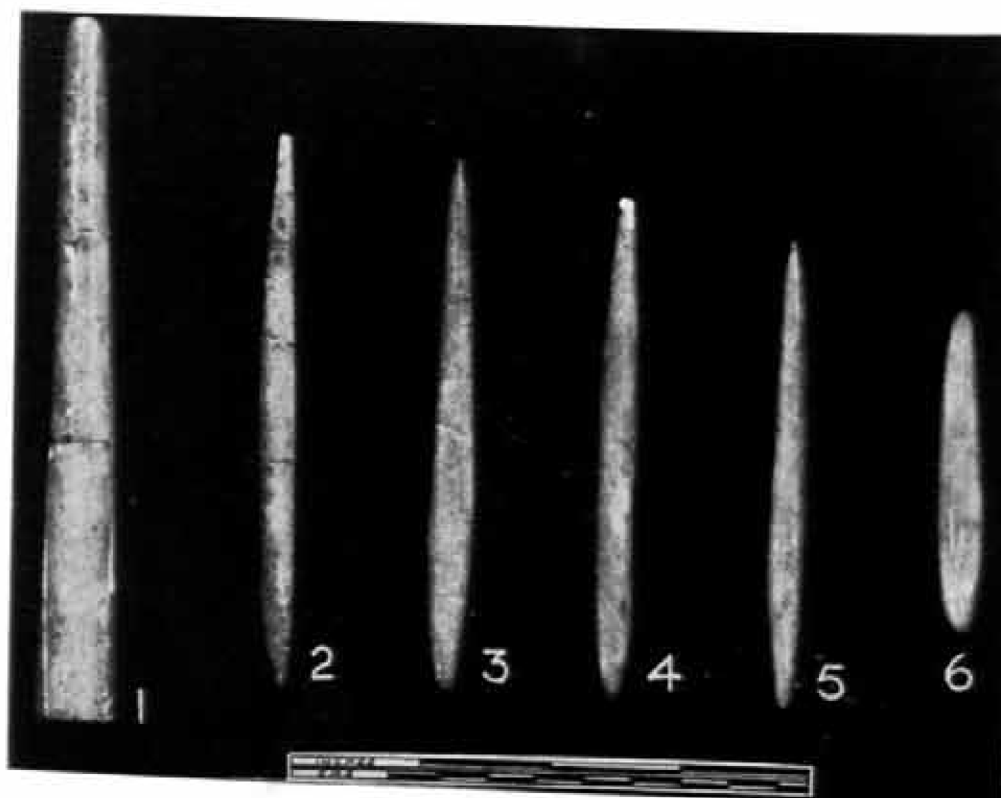


D

Lothal: miscellaneous objects (scale of C, $\frac{2}{3}$). *See page 16*

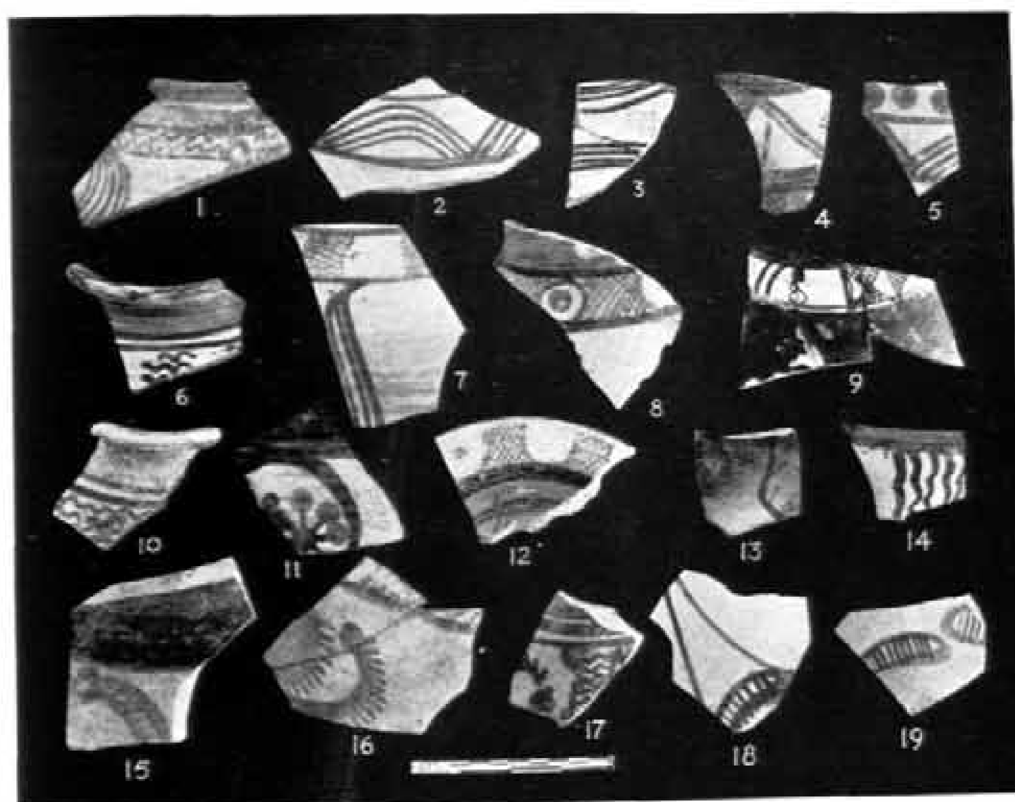


A

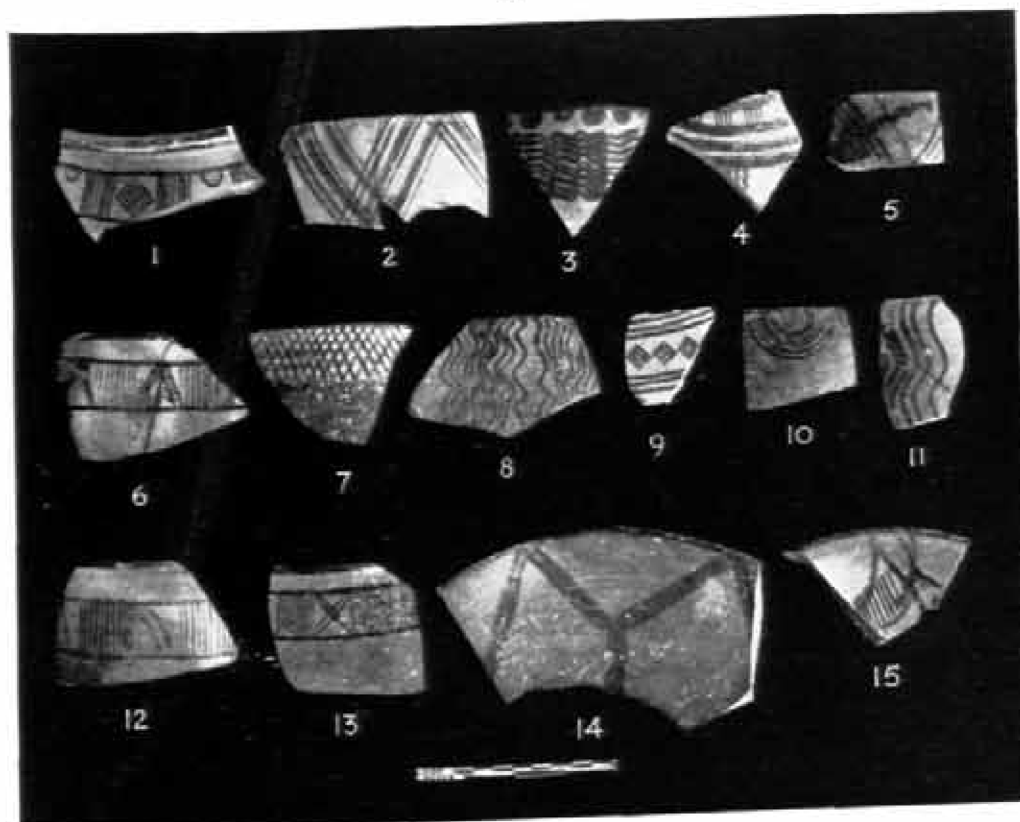


B

Lothal: A, *copper and bronze objects;* B, *ivory and bone points.* *See page 16*



A

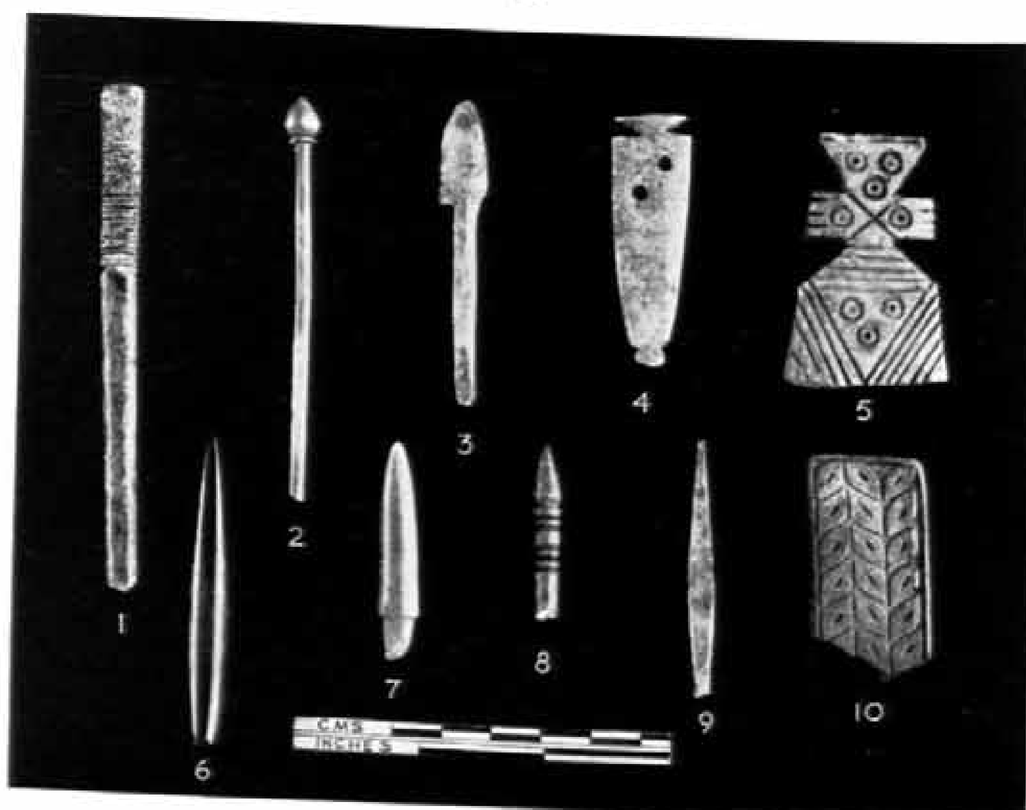


B

Prabhas Patan: painted red pottery, Period IB. *See page 16*

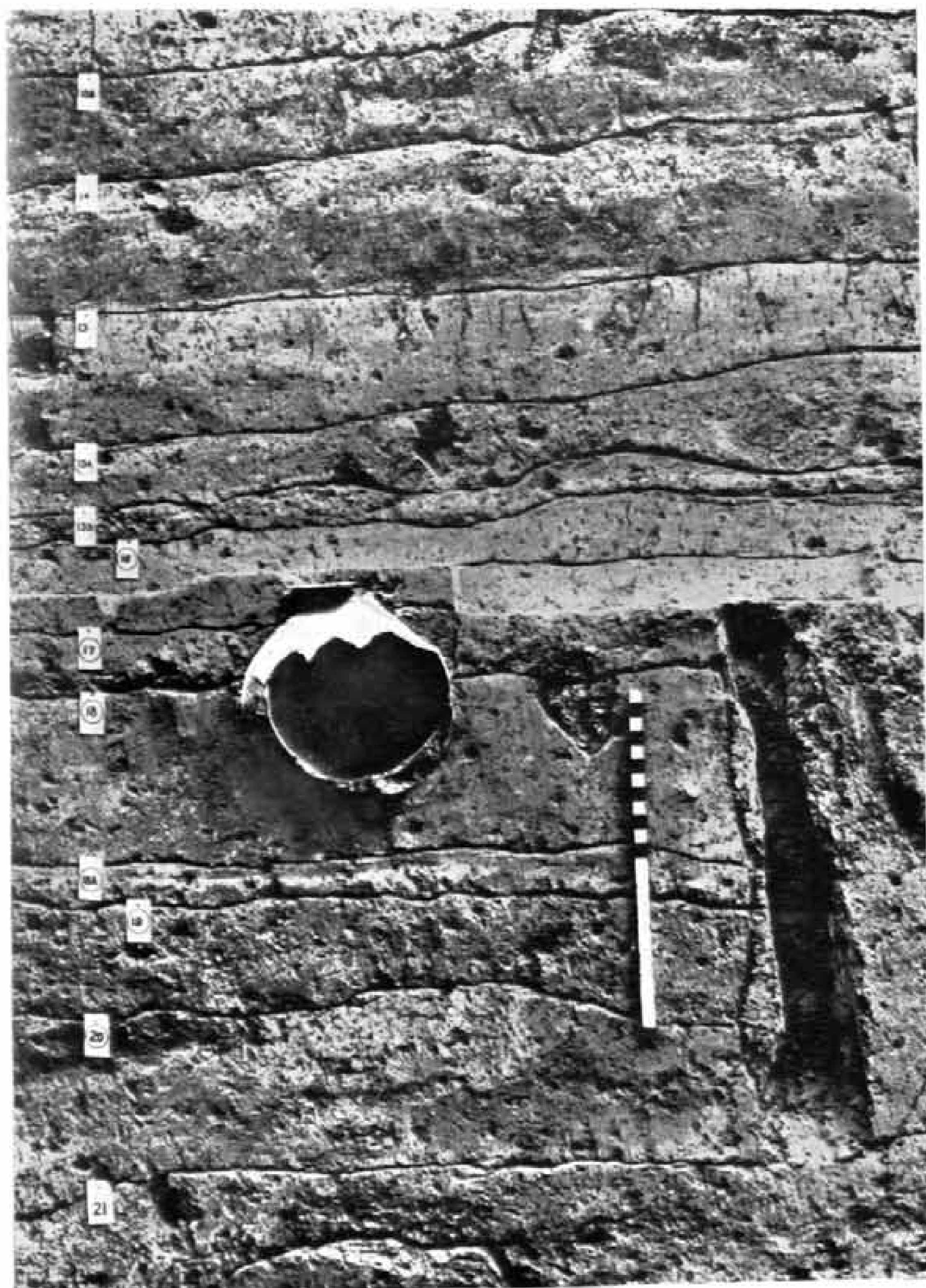


A

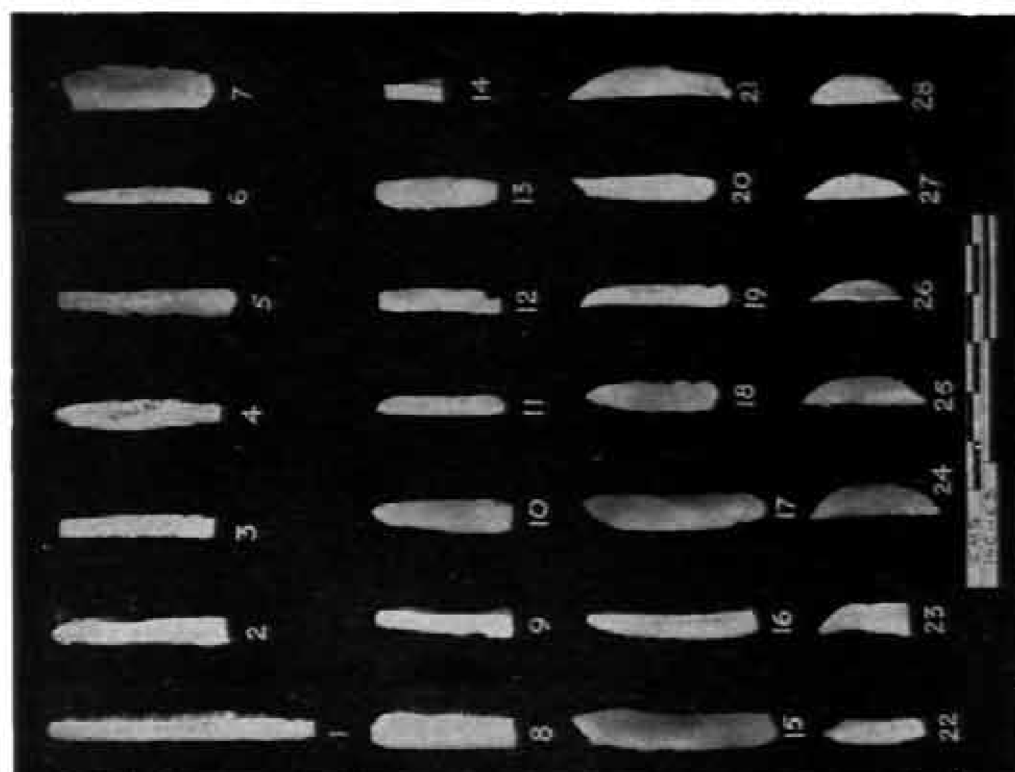


B

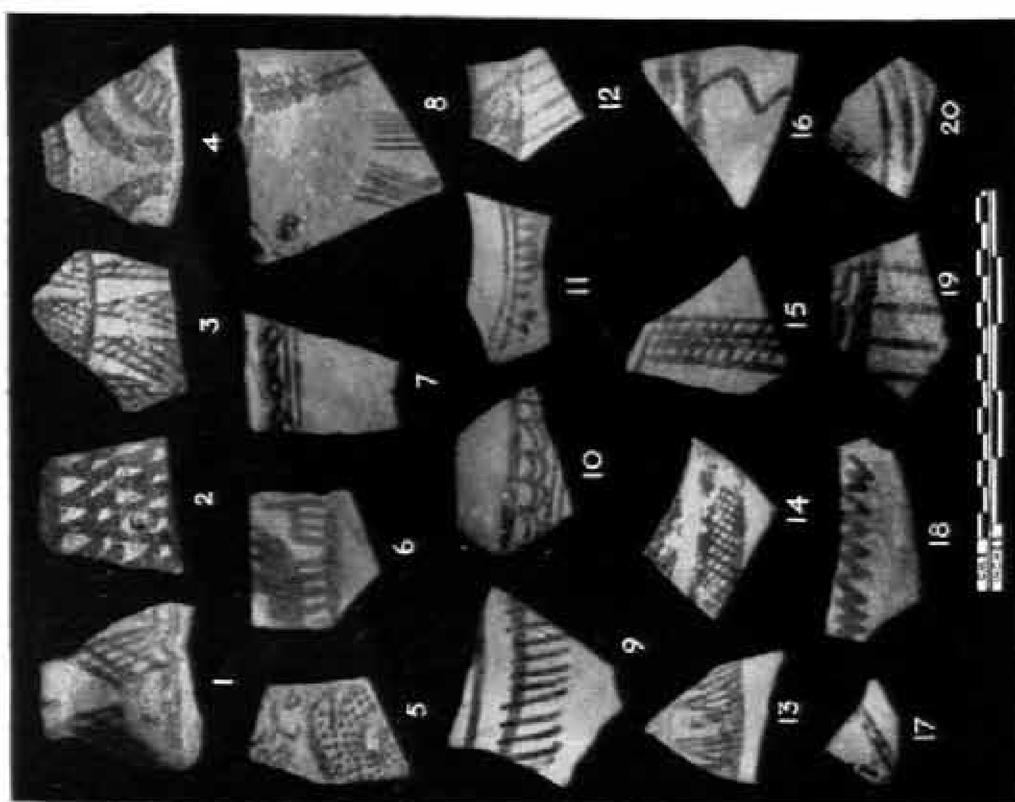
Prabhas Patan: miscellaneous stone, ivory and bone objects Period III. See page 17



Bahal: section showing a post-hole, Period III (scale of foot and inches). *See page 18*

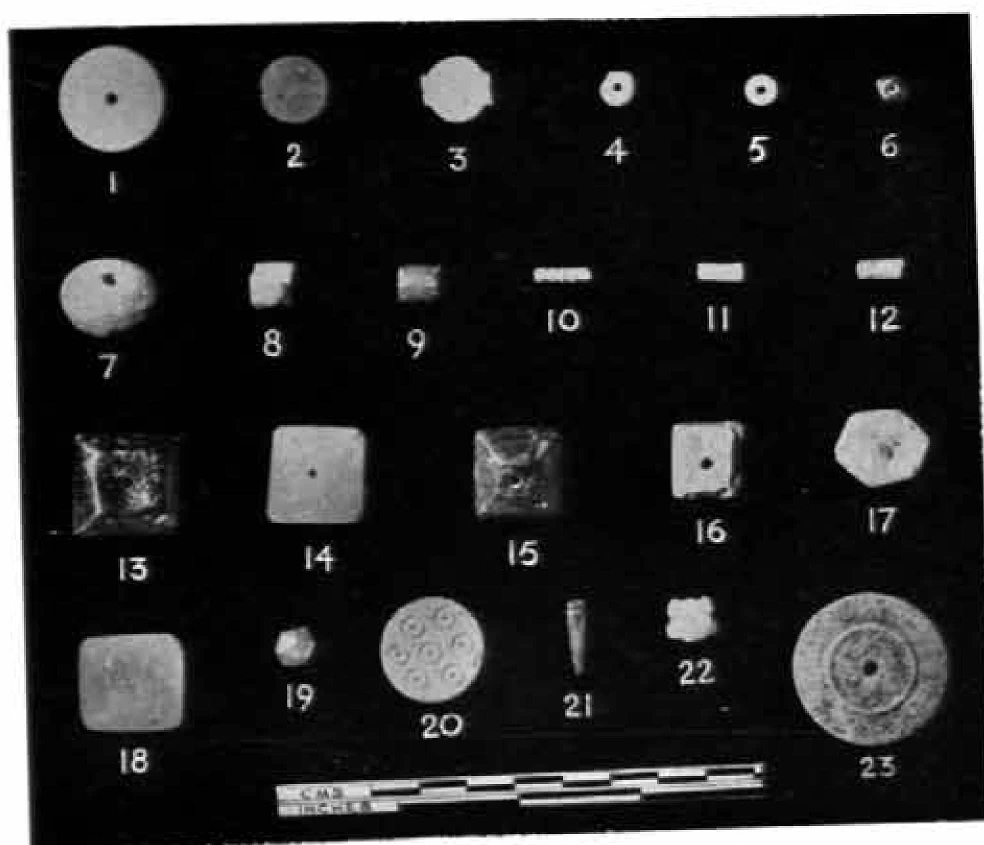


B



A

Bahal: painted pottery and microliths. Period I. See page 17



A



B

Bahal: A, *beads* (*4, 6, 9, 16, Period I; 1, 5, 8, 12-15, 17, 18, 20, 23, Period II; 2, 3, 7, 19, 22, Period III; 10, 11, 21, Period IV*); B, *terracotta combs of Period IB. See pages 17 and 18*

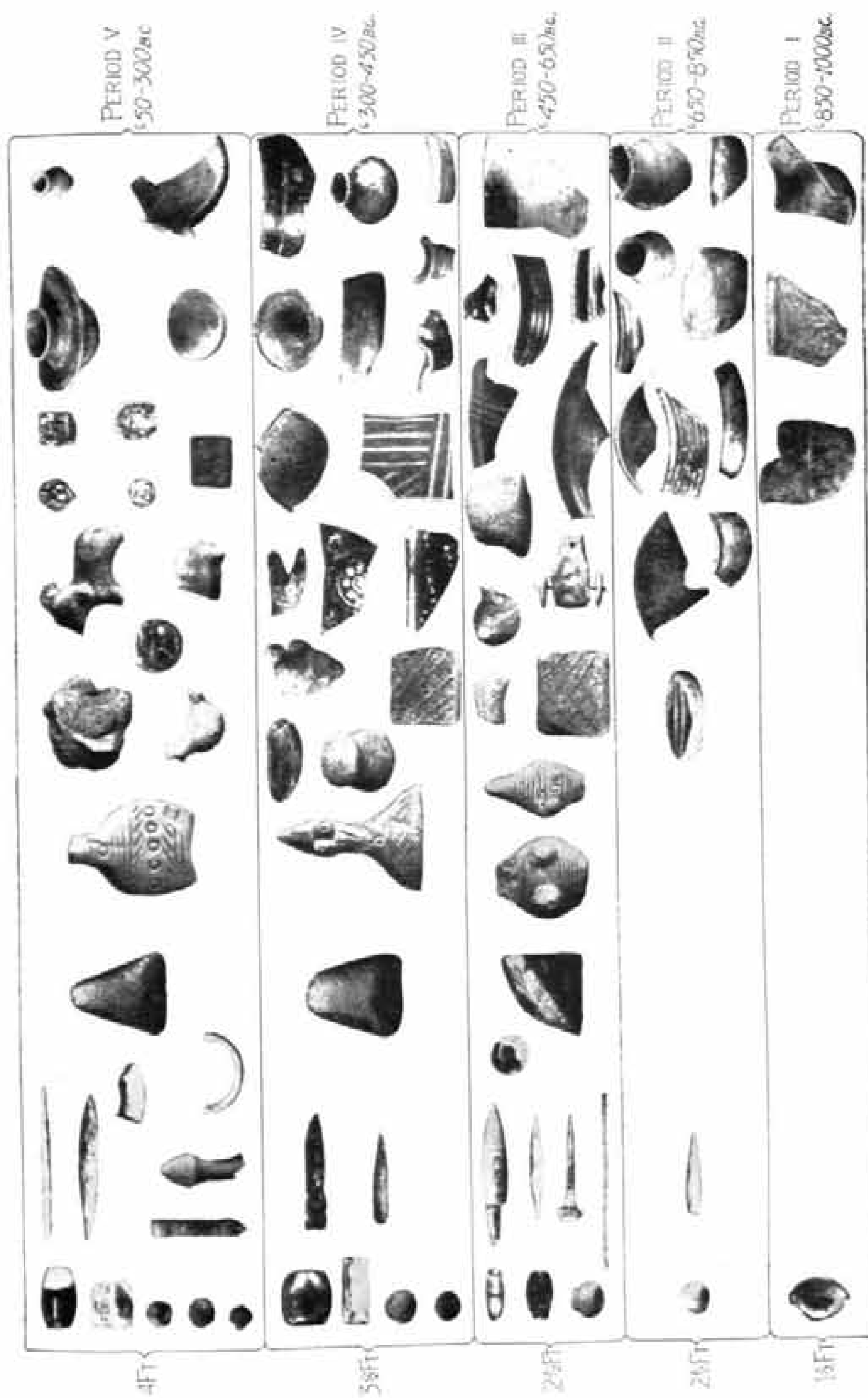


A

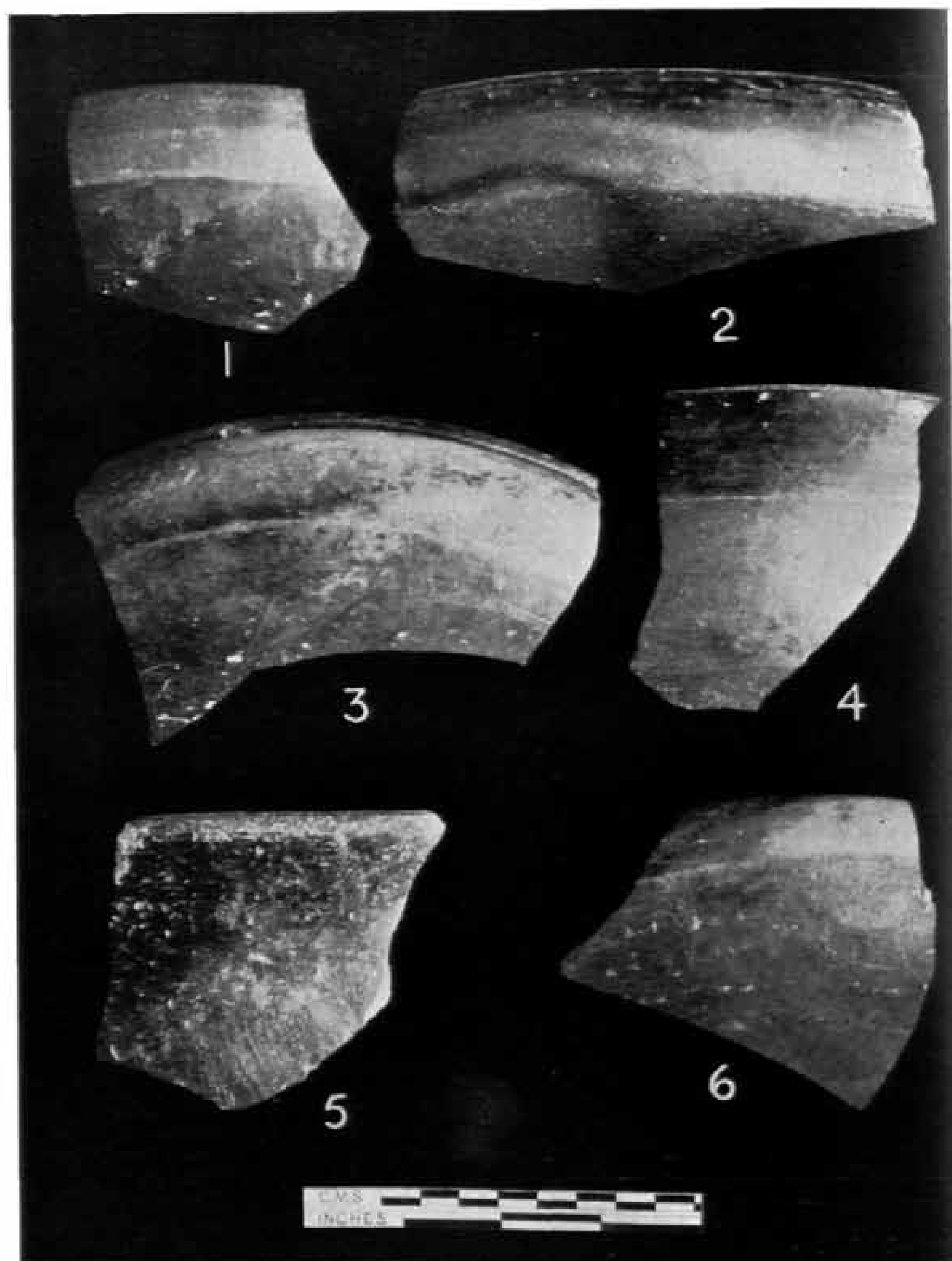


B

Tekwada: A, *urn-burial;* B, *urn-burials and extended burial.* (*Scales of feet and inches.*) *See page 8*



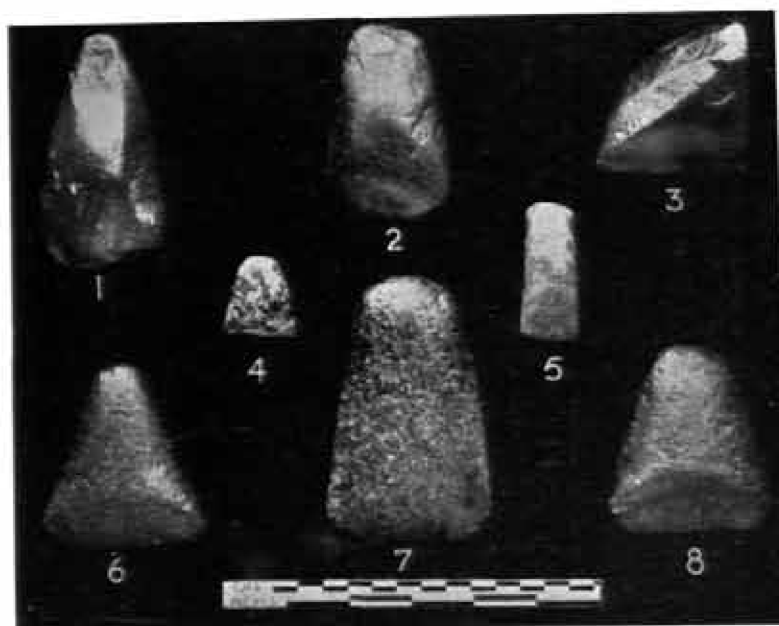
Sonepur: sequence of cultural equipments. *See page 19*



Sonepur: black-and-red pottery, Period II. *See page 19*



A



B

Sonepur: A, *terracotta nagas, Period III;* B, *stone celts.* *See page 19*



Ujjain: section across the rampart (scale of foot and inches). See page 20



A

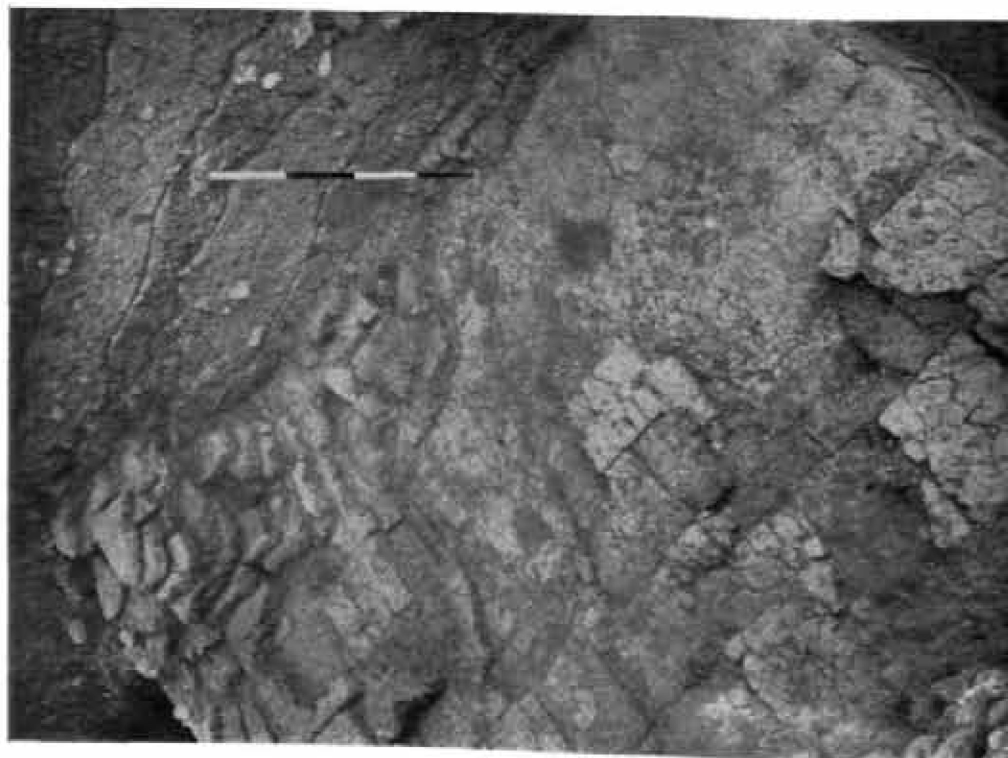


B

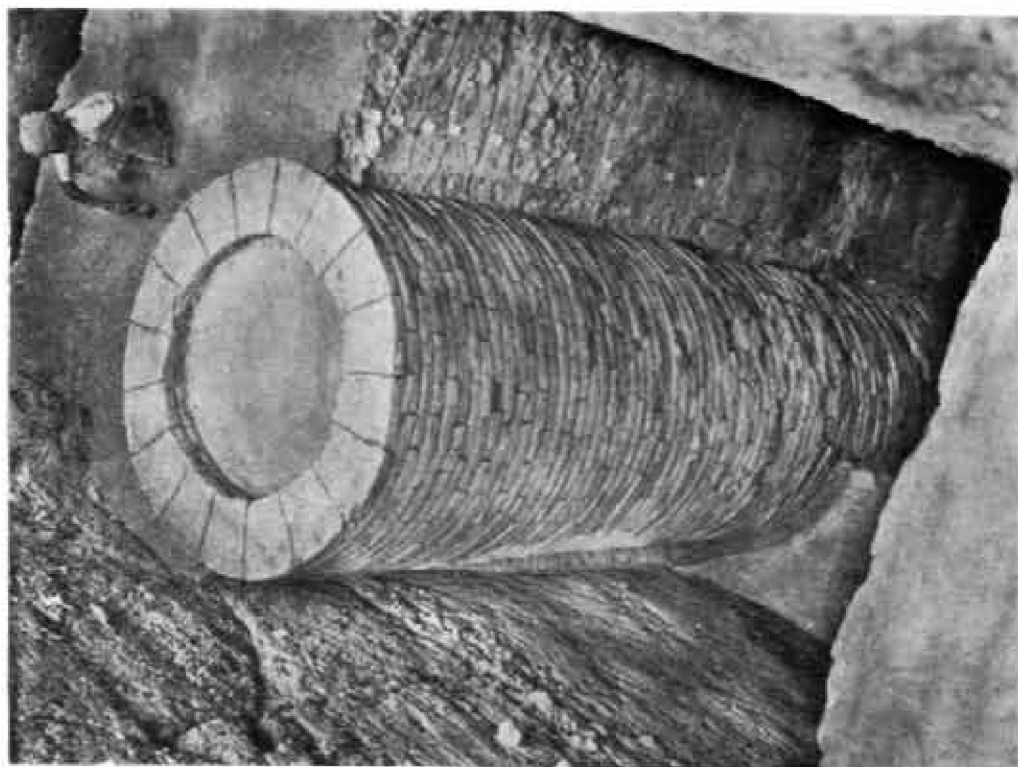


C

Ujjain: A, *skull of a bovine animal, and* B, *piece of rope, in the moat-filling (scales of inches);* C, *section across the toe of the rampart and moat (scale of feet).* *See page 20*



A



B

Ujjain: A, *brick revetment over the rampart (scale of feet);* B, *brick well.* *See pages 20 and 27*

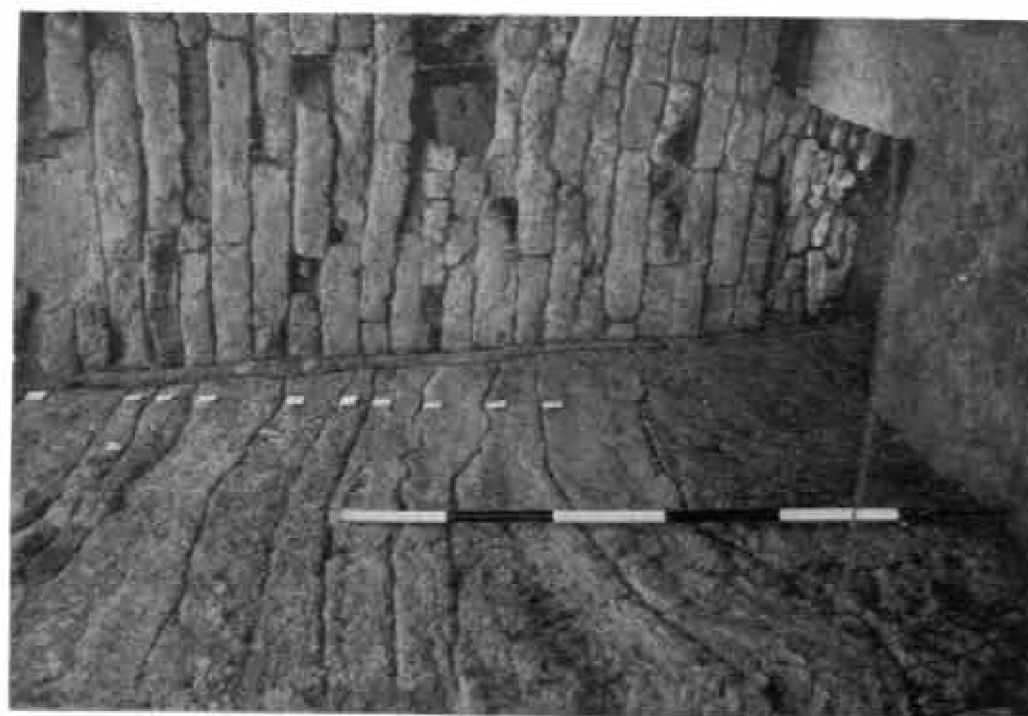


A



B

Ujjain: A, eroded exterior of the rampart, and B, rubble structure, Period II, with successive floors (scales of feet).
See page 24



B



A

Ujjain: A, *mud-brick structure, and* B, *part of massive underground brick structure. Period II* [illegible]



B



A

Ujjain: A, *ring-wells, terracotta pipe-drain and rubble-lined mud structures, Period III (scale of feet);* B, *structures of different Periods.*

See page 27

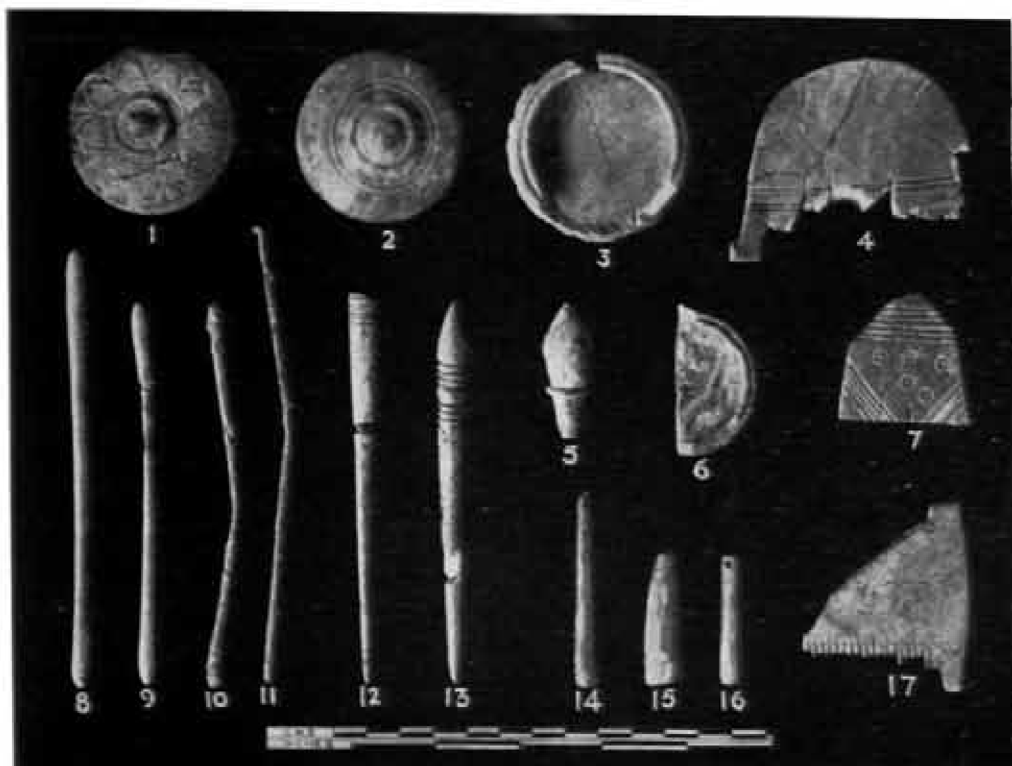


A



B

Ujjain: A, *brick structure on rubble plinth, and* B, *bottomless soakage-jar, Period III (scales of feet and inches).* *See page 27*



A



B

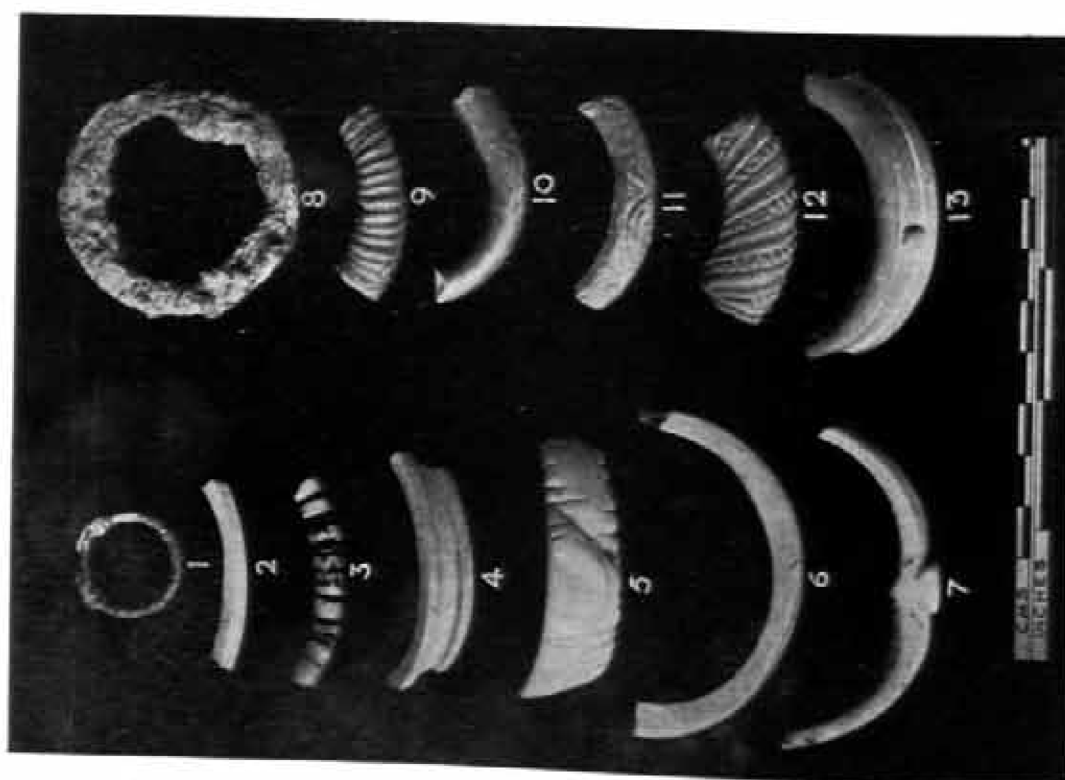
Ujjain: A, *object of toilet* (*5, 7, Period I; 6, 15, Period II; 1-4, 8, 14, 16, 17, Period III*); B, *unfinished agate beads, Period II. See page 27*



B

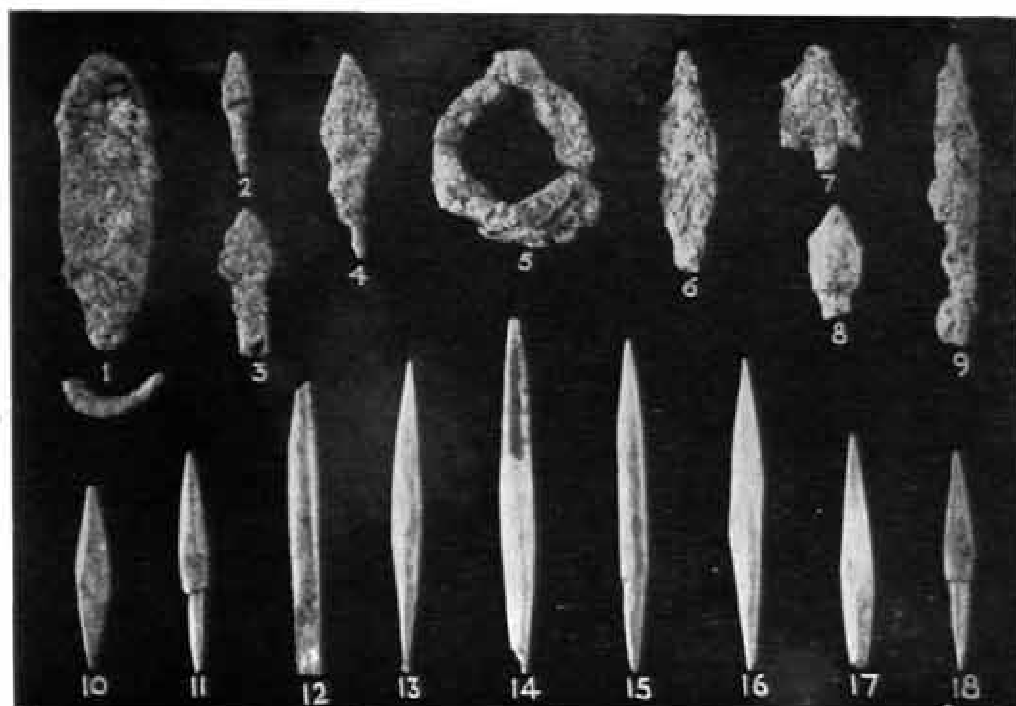


C



A

Ujjain: A, *ring and bangles of different Periods*; B, *terracotta head and* C, *moulded medallion, Period III. See pages 23 and 26*



A



B

Ujjain: A, *ring and spear-heads of iron and arrow-heads of iron and bone, Period II* (*note blood-stain on 14*); B, *terracotta votive tanks, Period III.* (*Scale* ½.) *See pages 27 and 28*



A



B

Kausambi: A, *cutting across the bastion;* B, *brick tower on the bastion (scale of feet). See page 28*



B



A

Kausambi: A, *sandstone Buddha, and* B, *sandstone balustrade-pillars (scales of inches).* *See page 20*

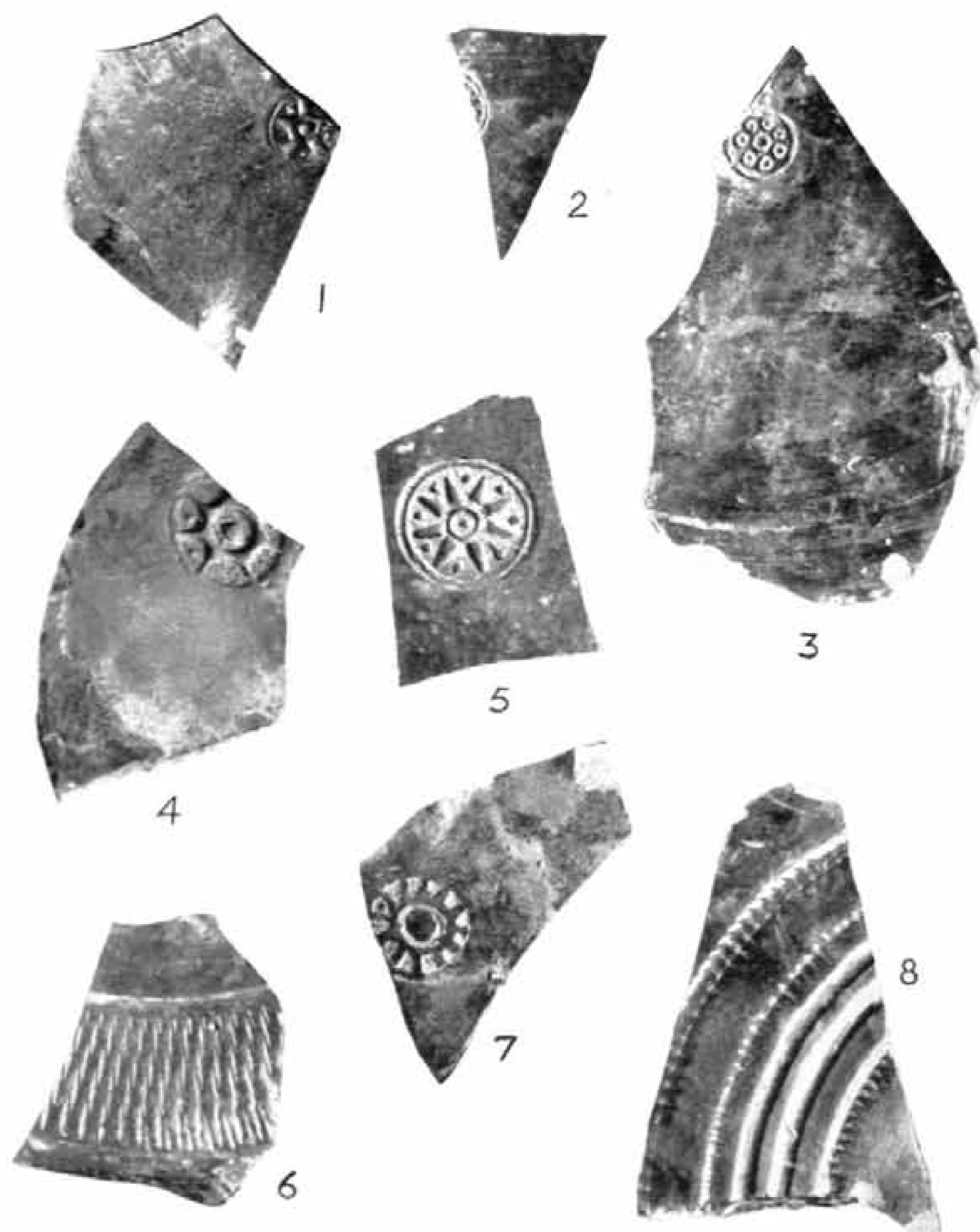


B



A

Kausambi: A, *sandstone balustrade-pillar with Gaja-Lakshmi above foliage (scale of inches);* B, *details of Gaja-Lakshmi.* *See page 29*



Chandraketugarh: rouletted and stamped pottery (scale ¾). *See page 30*

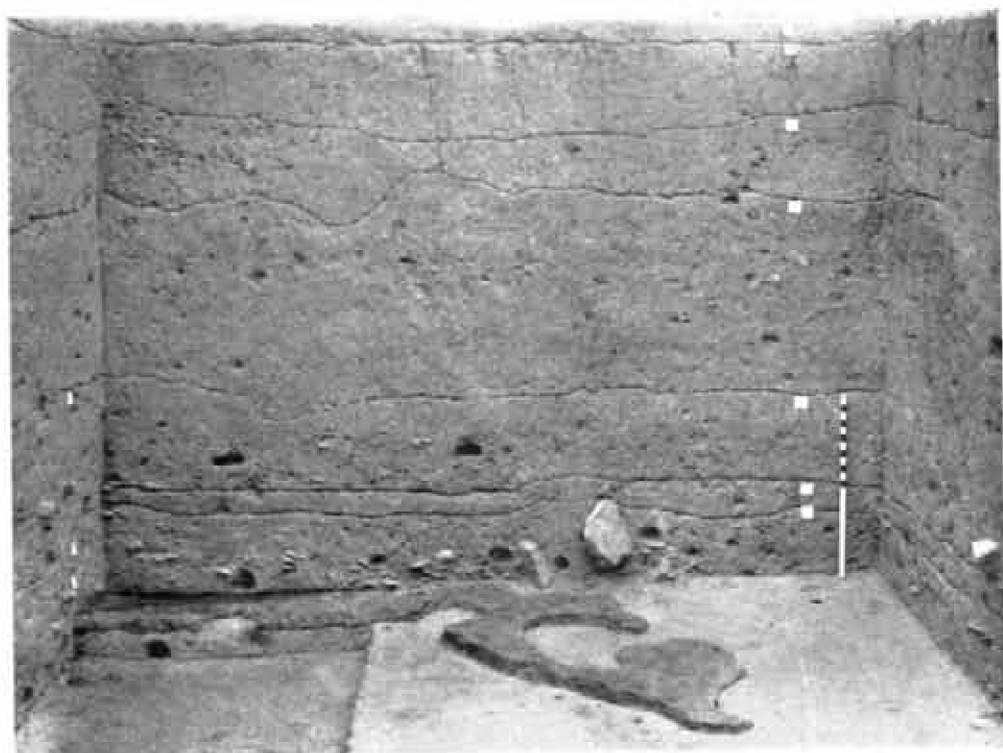


A



B

Jaugada: A, *general view of the fortified site;* B, *view of rock with Asokan Edict, marked* ×. *See page* 30

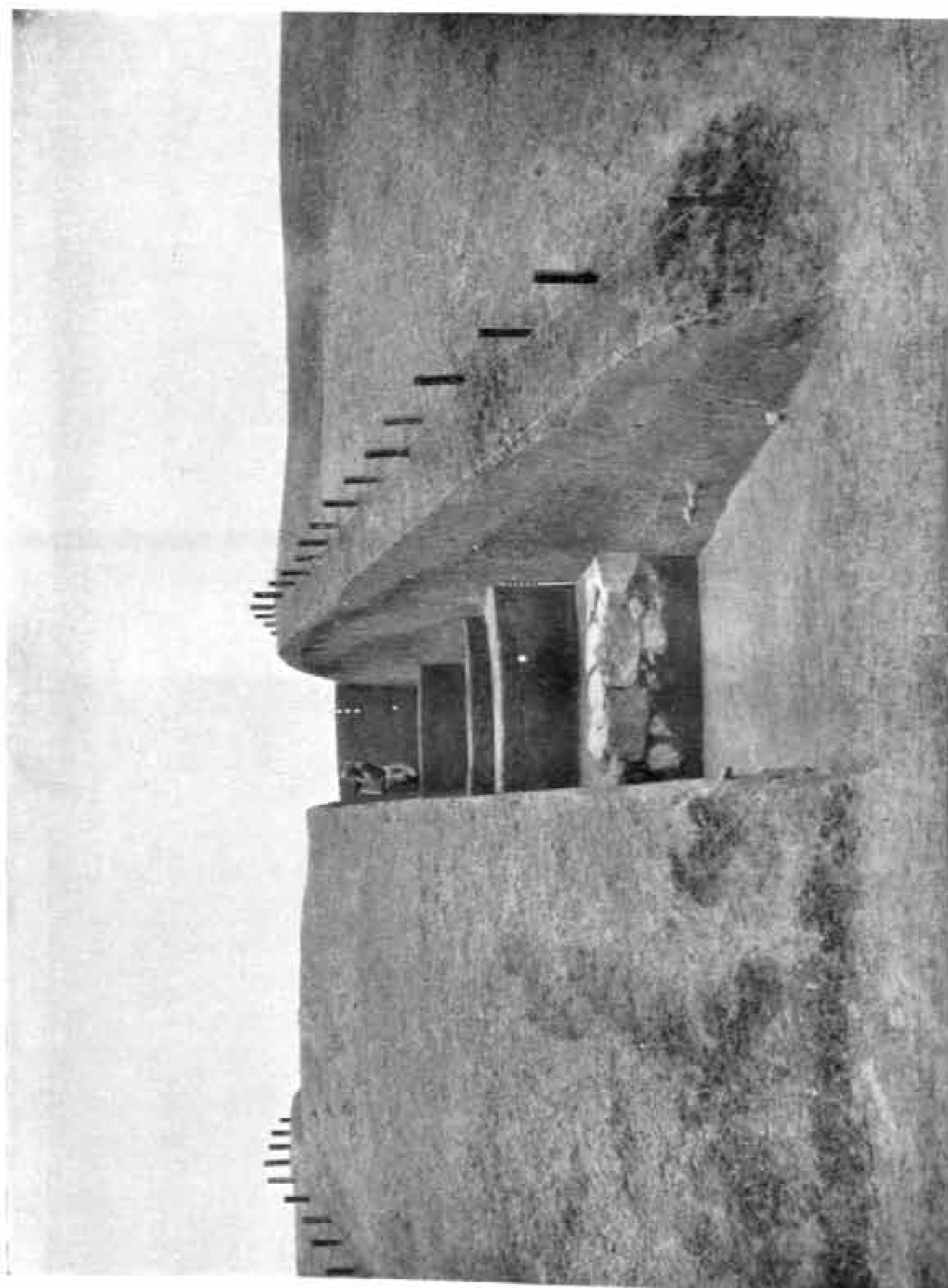


A

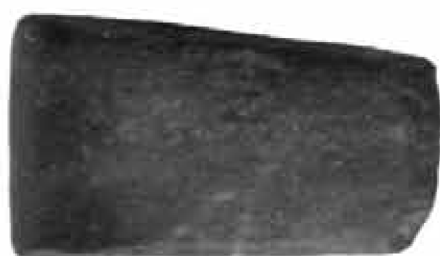


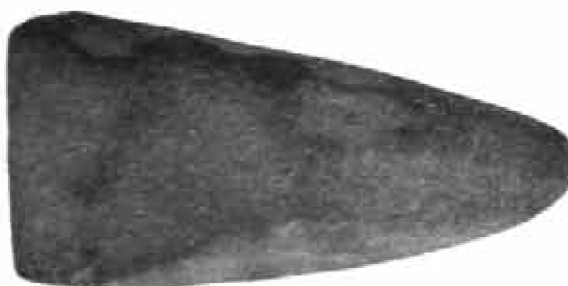
B

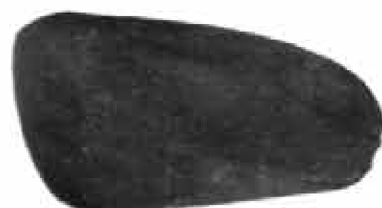
Jaugada: A, *patch of a burnt-earth flooring (scale of foot and inches);* B, *rubble wall against the inner face of the rampart (scale of inches).* *See pages 30 and 31*

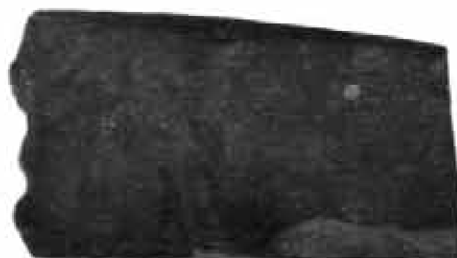


Jaugada: cutting across the rampart. See page 31


1


2

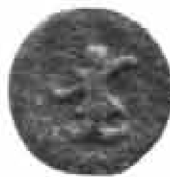

3


4

A


1


2


3


4


5


6


7

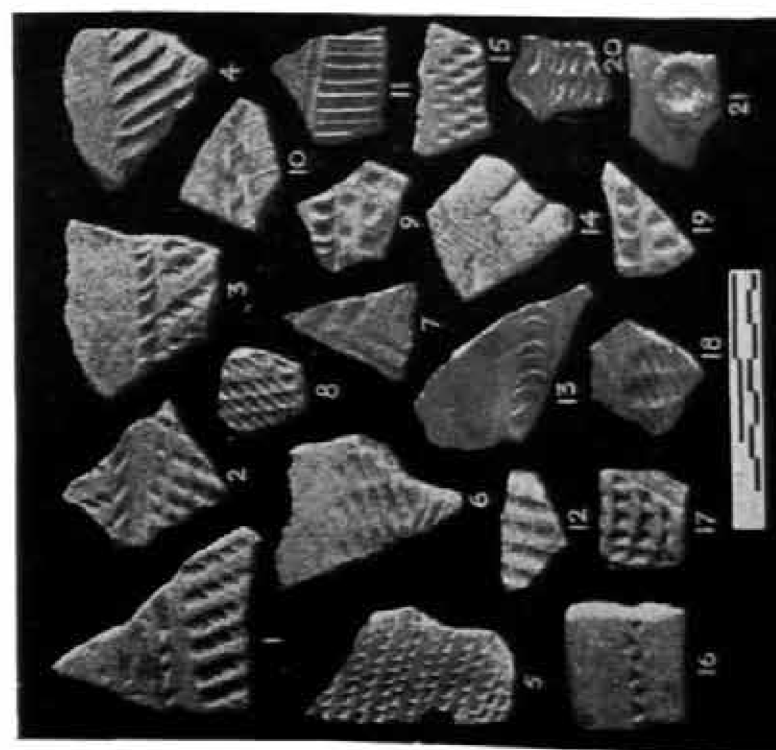

8

B

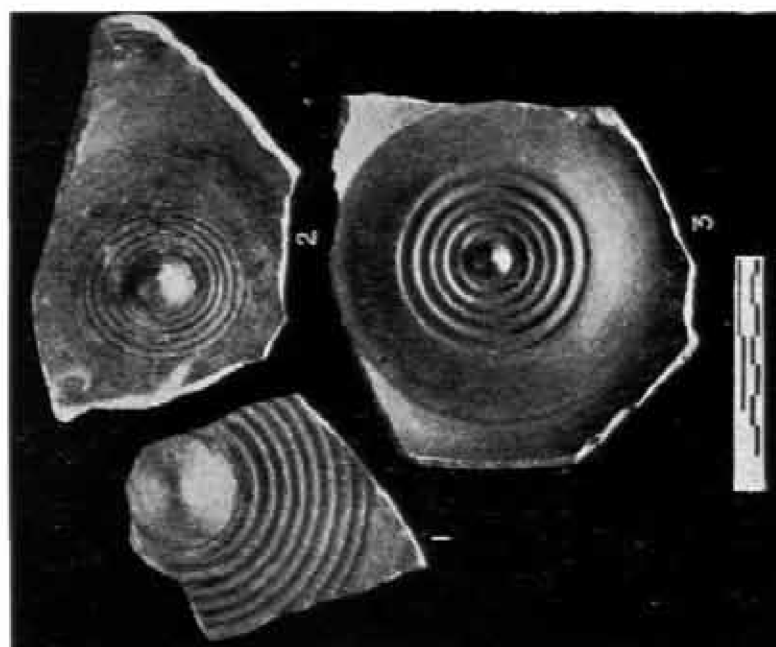


C

Jaugada: A, *neoliths*; B, *Puri-Kushan coins*; C, *punch-marked coins*. (*Scale* $\frac{1}{1}$.) *See pages 30 and 31*

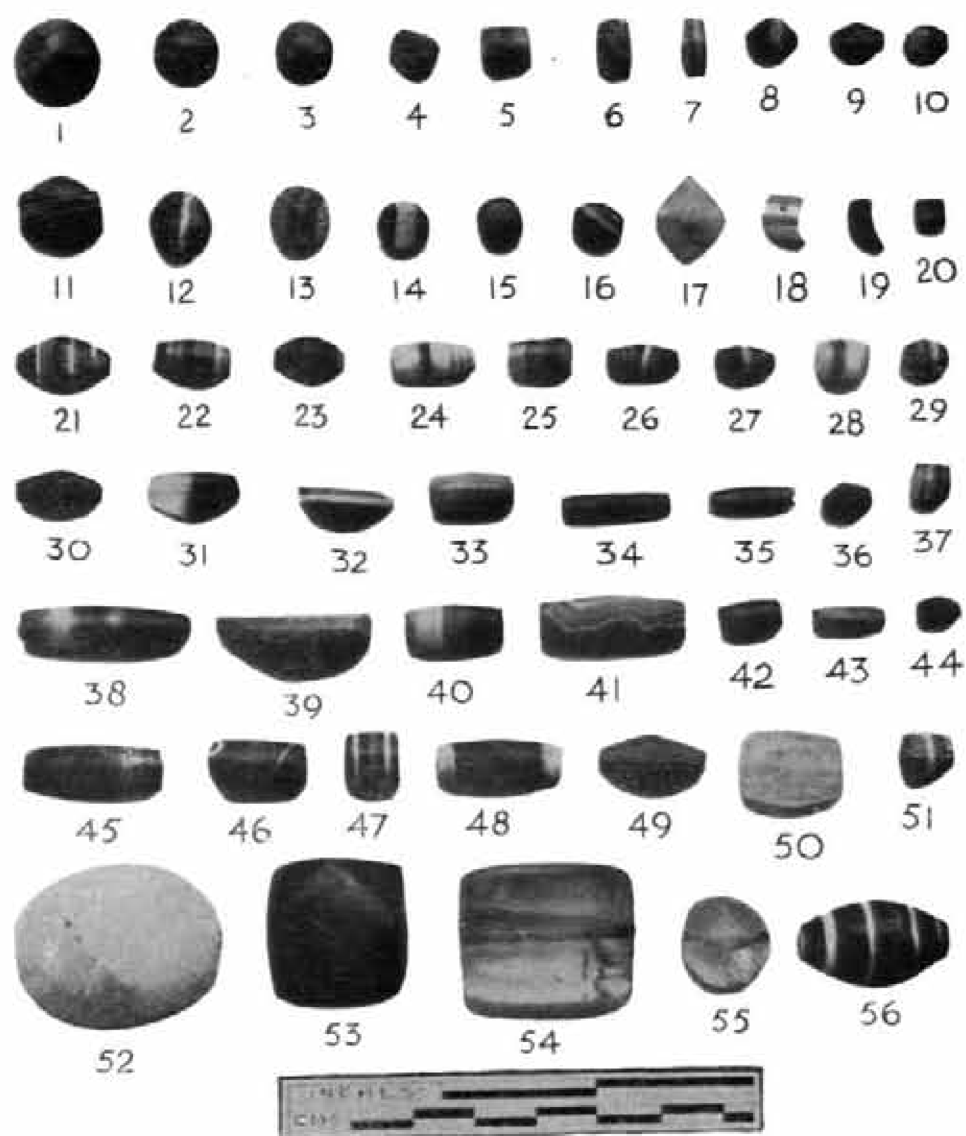


A



B

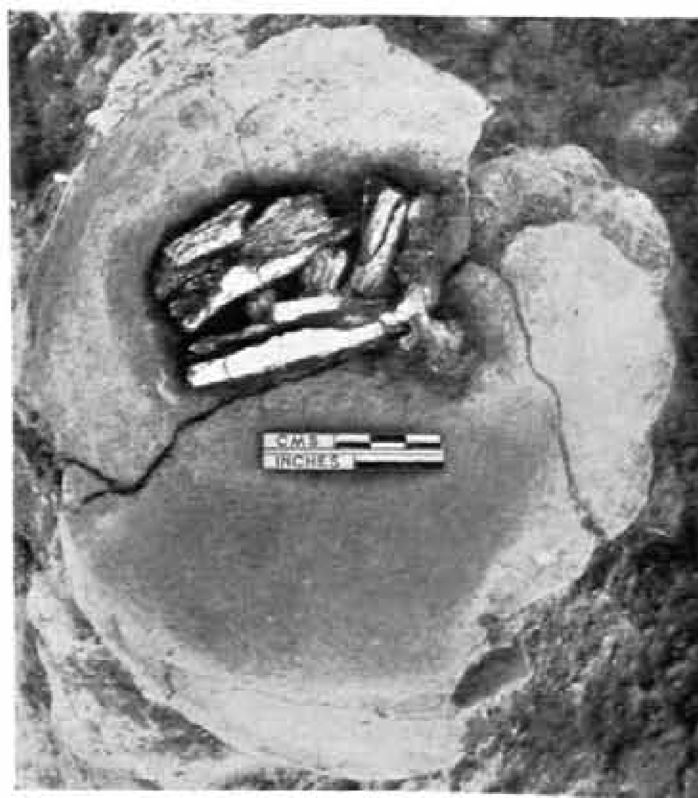
Jaugada: A, *decorated pottery, and* B, *knobbed vessels, Period II.* *See pages* 30 *and* 31



Jaugada: *beads (2, 7 and 21, Period I; 3 and 6, Period II; rest, surface).* *See pages 30 and 31*



A

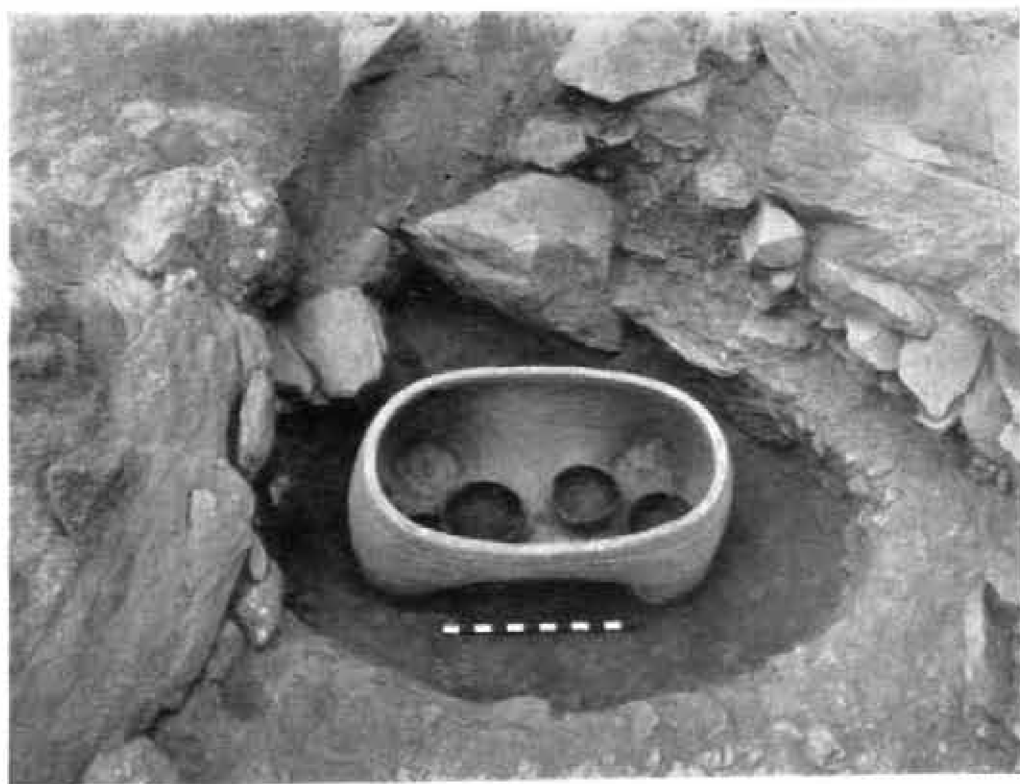


B

Kunnattur: A, *Megalith 5 during excavation (scale of foot and inches);* B, *skeletal remains inside a pot in Megalith 5.* *See page 34*

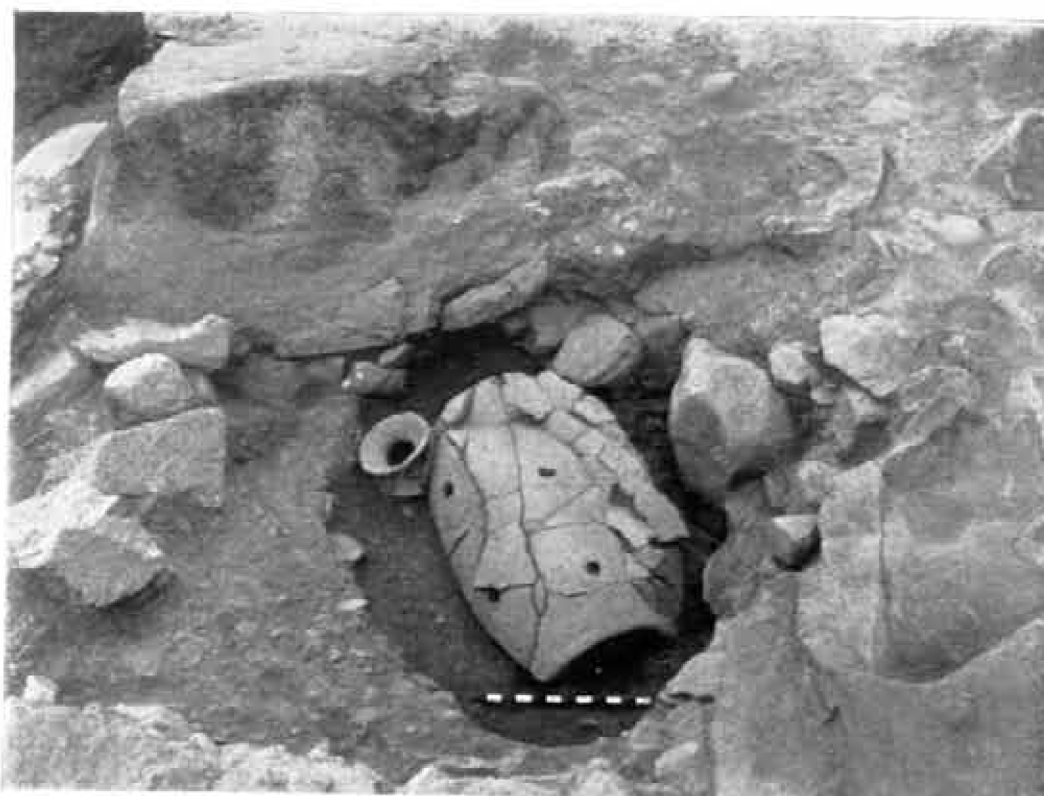


A

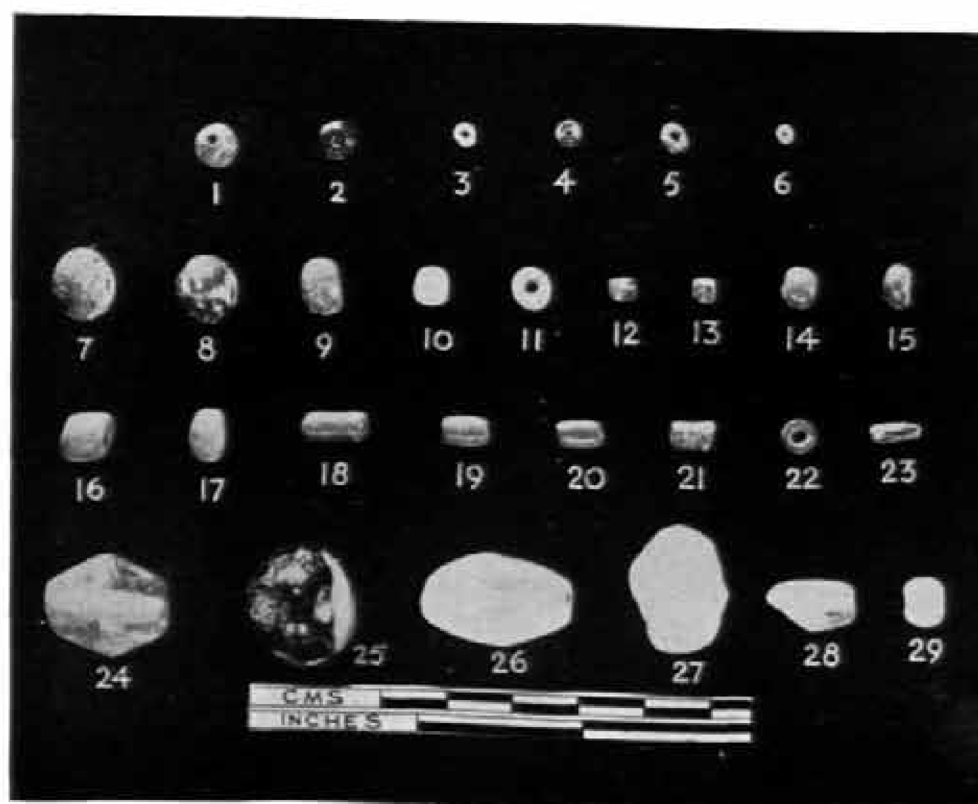


B

Kunnattur: Megalith 7, during and after excavation (scales of inches). *See page 34*

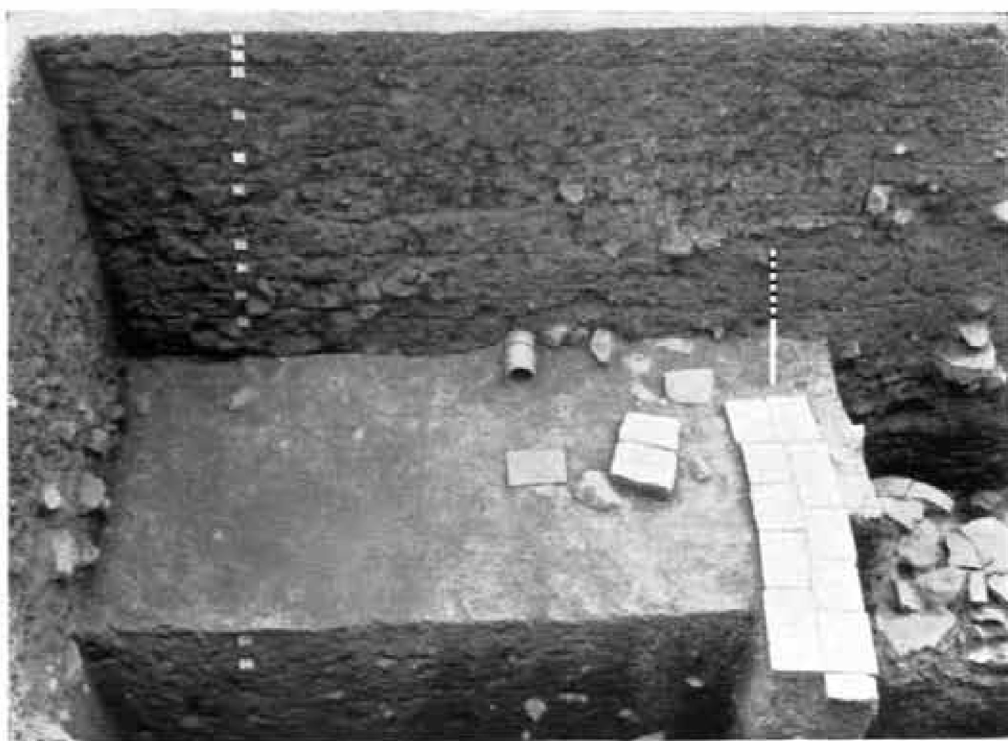


A



B

Kunnattur: A, *lid of sarcophagus in Megalith 7 (scale of inches);* B, *beads from habitation-site, Period I. See page 34*



A

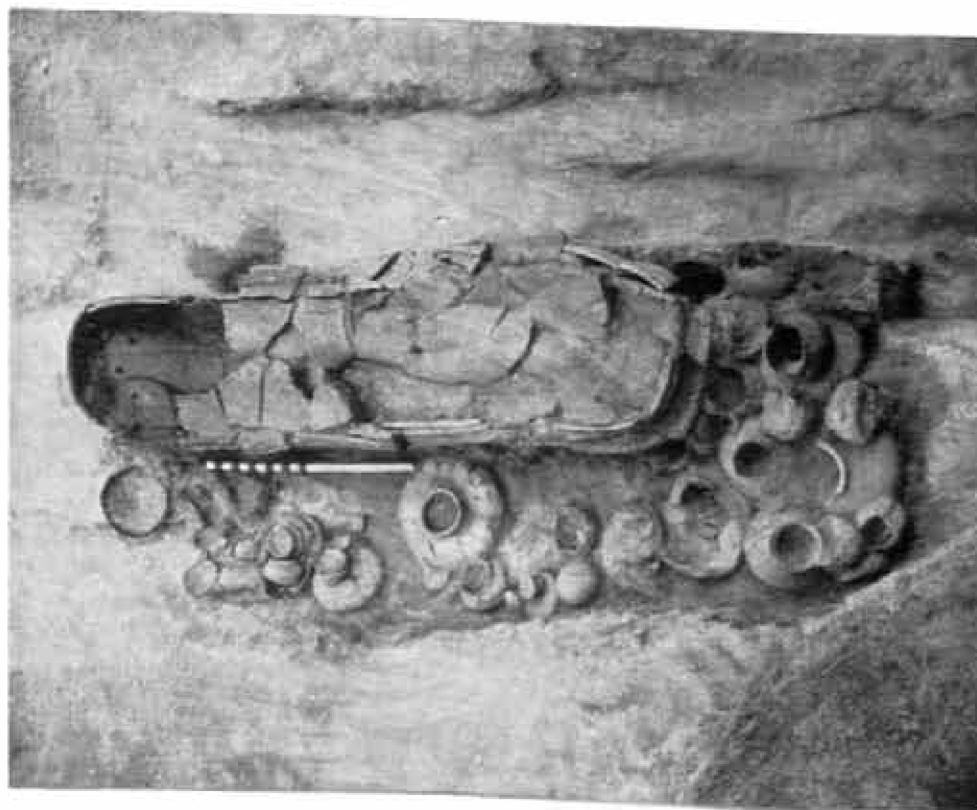


B

Kunnattur, habitation-site: A, *brick wall, Period IA;* B, *stone wall, Period IB.* (*Scales of feet and inches.*)
See page 34



A



B

Jadigenahalli: A, *sub-pits within large pit in Megalith 1 (scale of feet);* B, *sarcophagus and pots in Megalith 4 (scale of foot and inches). See page 35*



A



B

Dhanora: A, *apsidal stone enclosure with capstone;* B, *apsidal stone enclosure around menhirs.* *See page 35*



A



B

Dhanora: A, *menhir;* B, *stone enclosure during excavation. (Scales of metres.)* *See page 35*



A



B

Nagarjunakonda: A, *cairn-circle with capstone (scale of feet)*; B, *oblong slab-cist (length 7 ft.).* *See page 36*



A

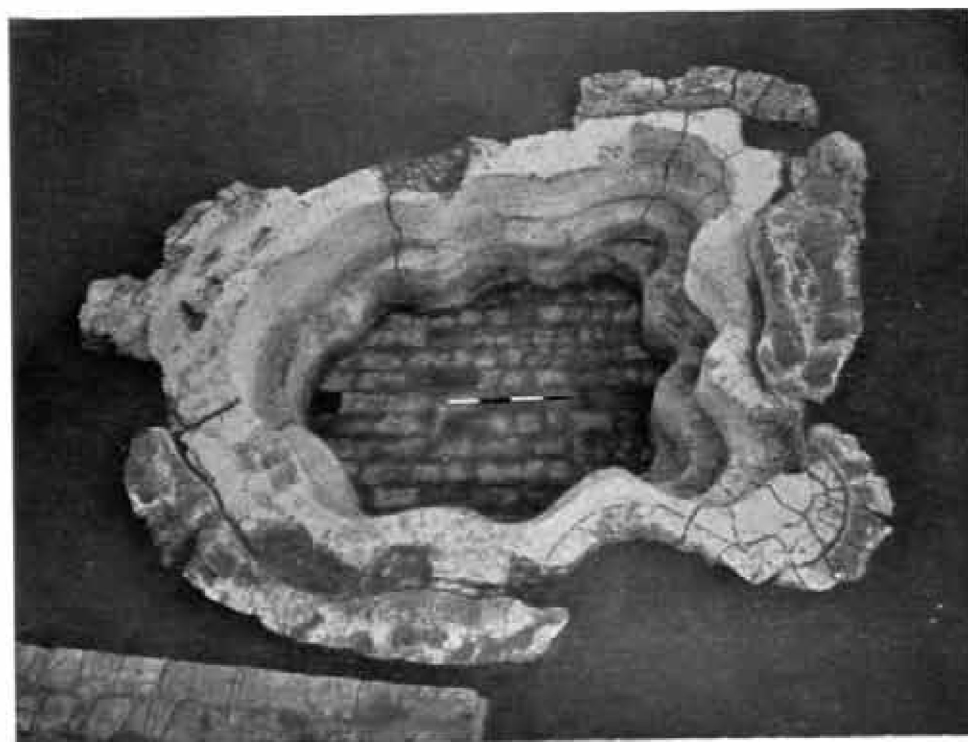


B

Nagarjunakonda: Karttikeya temples. *See pages 36 and 37*

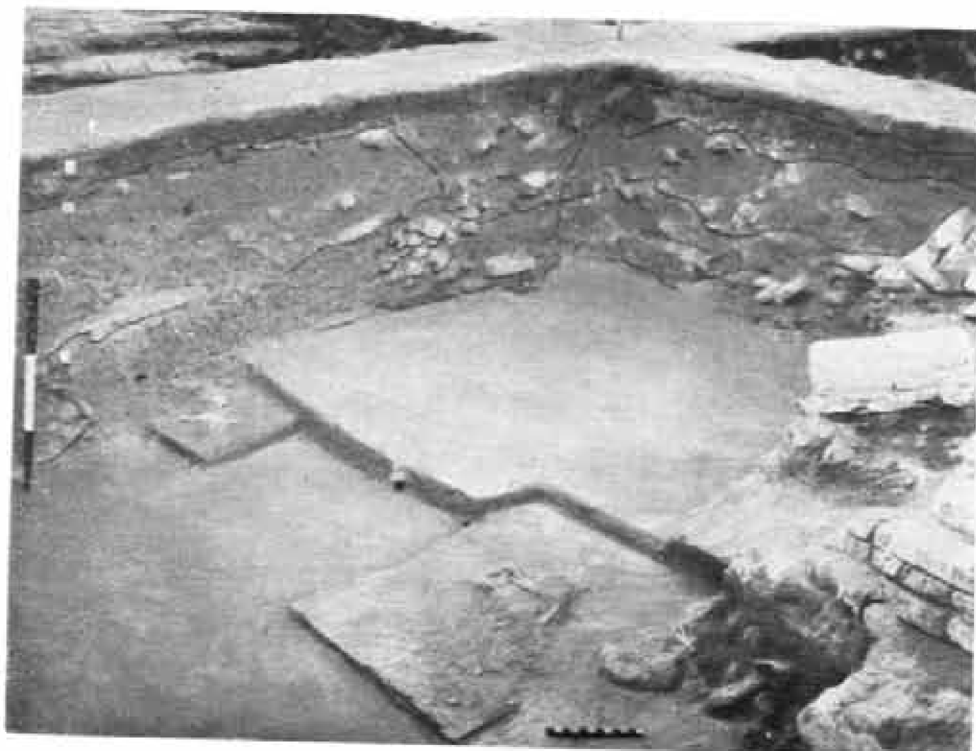


A

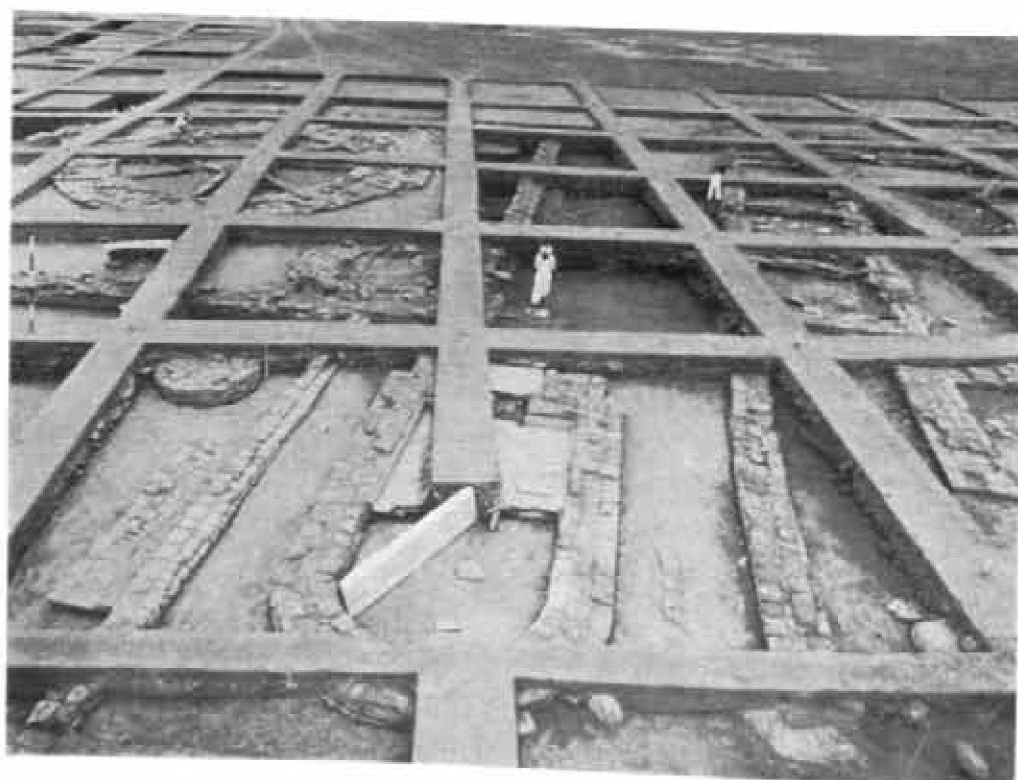


B

Nagarjunakonda: brick tanks (scales of feet). *See page* 37



A



B

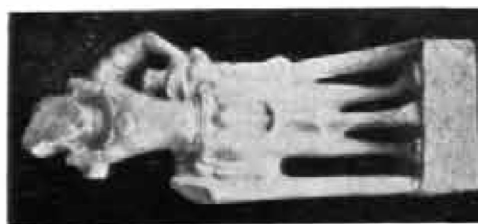
Nagarjunakonda: A, *animal-bones, presumably of a goat (scales of feet and inches);* B, *monastic structures showing stupa-basement in left background.* *See page 37*



A



B

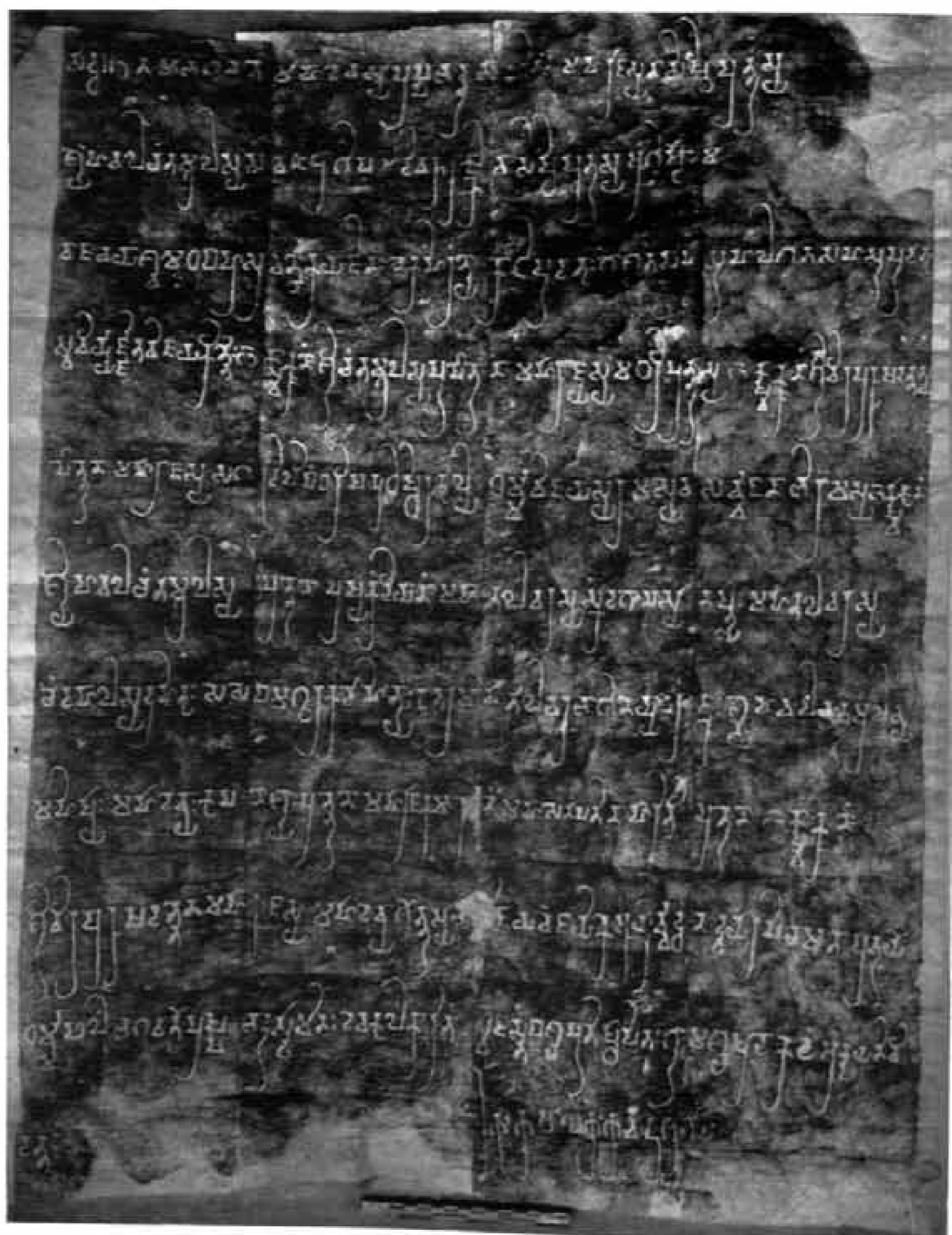


C

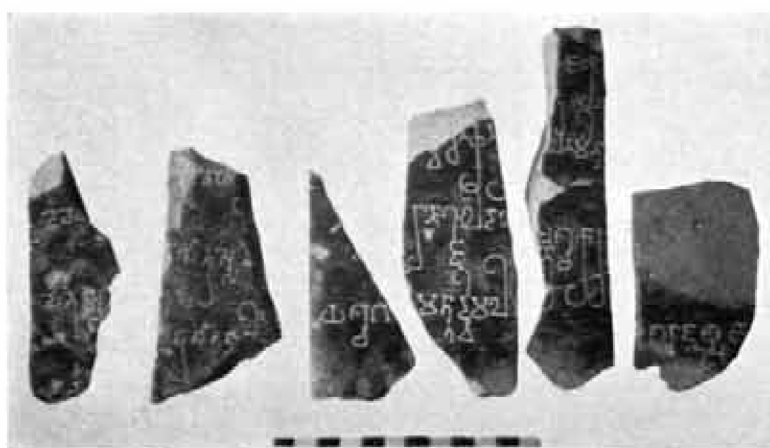


D

Nagarjunakonda: A, *sculptured frieze with inscription (length 8 ft. 6 in.)*; B, *head of Karttikeya (height 8 in.)*; C, *standing Karttikeya (height 1 ft.)*; D, *bronze statuette of Siddhartha.* *See pages 36–38*



Nagarjunakonda: inscription on a pillar. *See page 36*

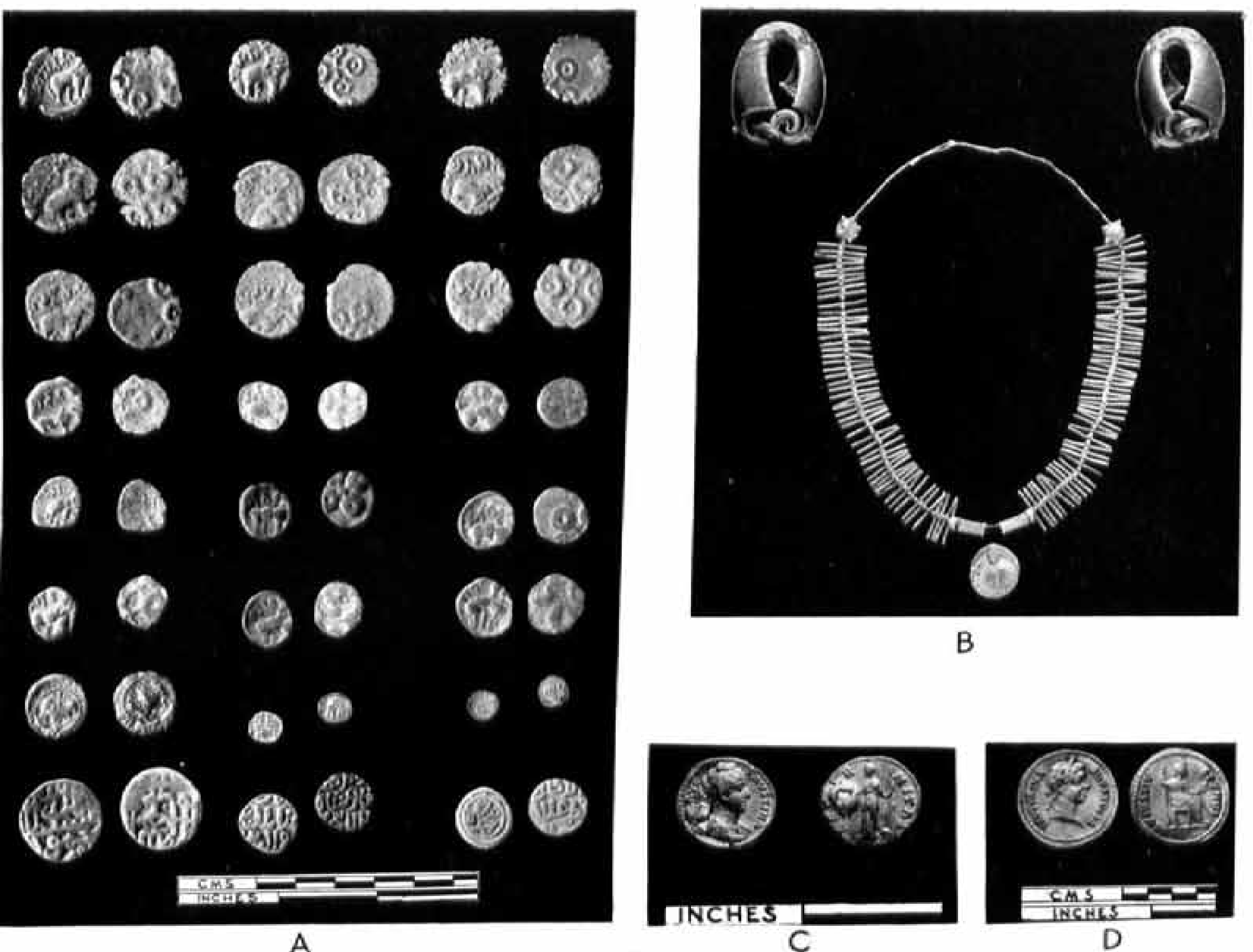


A

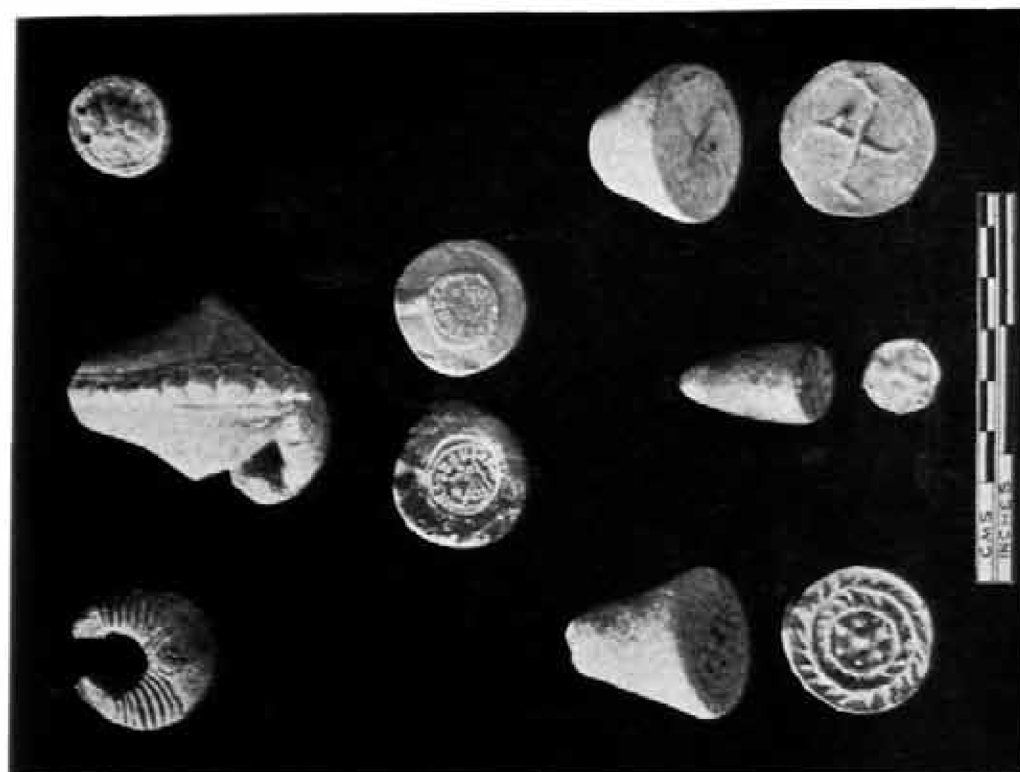


B

Nagarjunakonda: fragments of inscribed pillars (scales of inches). *See page 36*



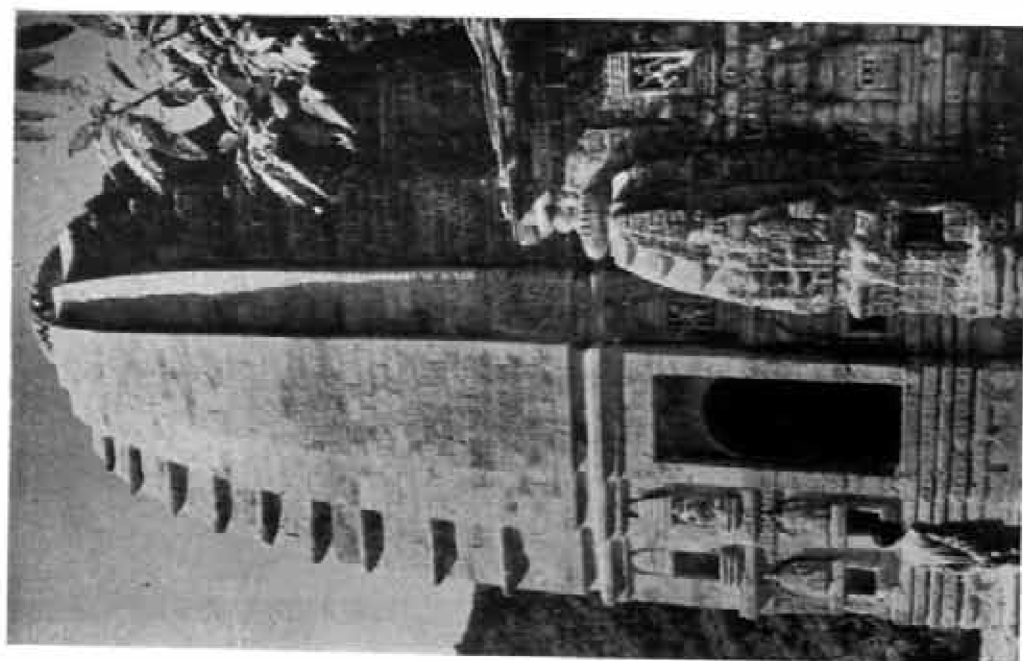
Nagarjunakonda: A, *coins*; B, *gold ornaments* (*scale* ½); C *and* D, *Roman aurei*. *See page 38*



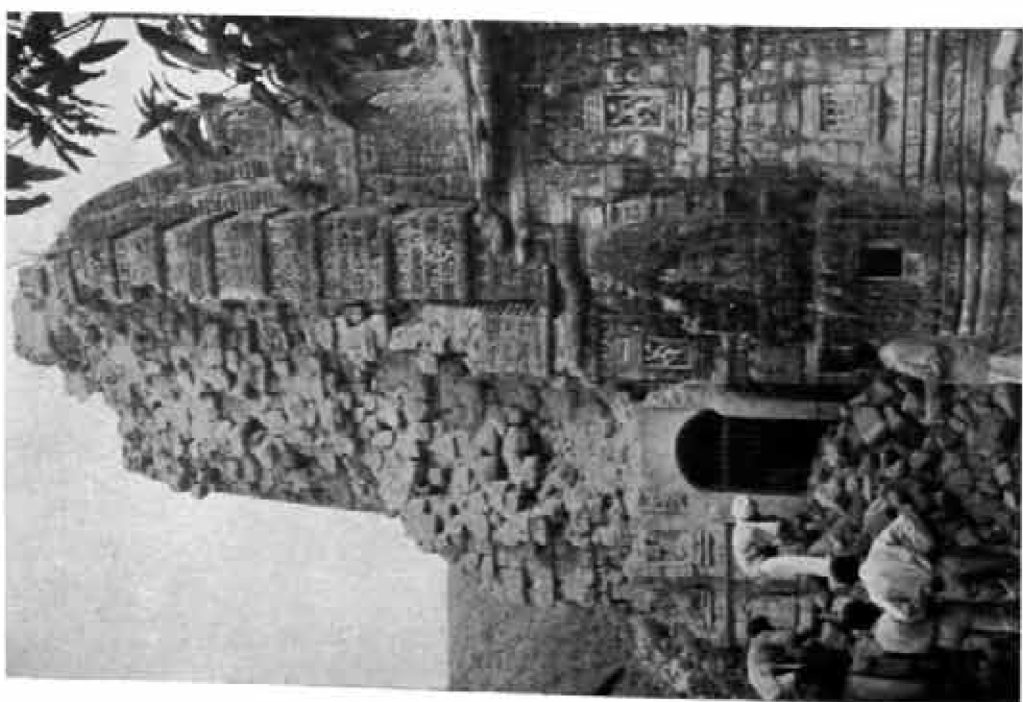


A B

Nagarjunakonda: A, *terracotta figurines;* B, *miscellaneous terracotta objects.* *See page 38*

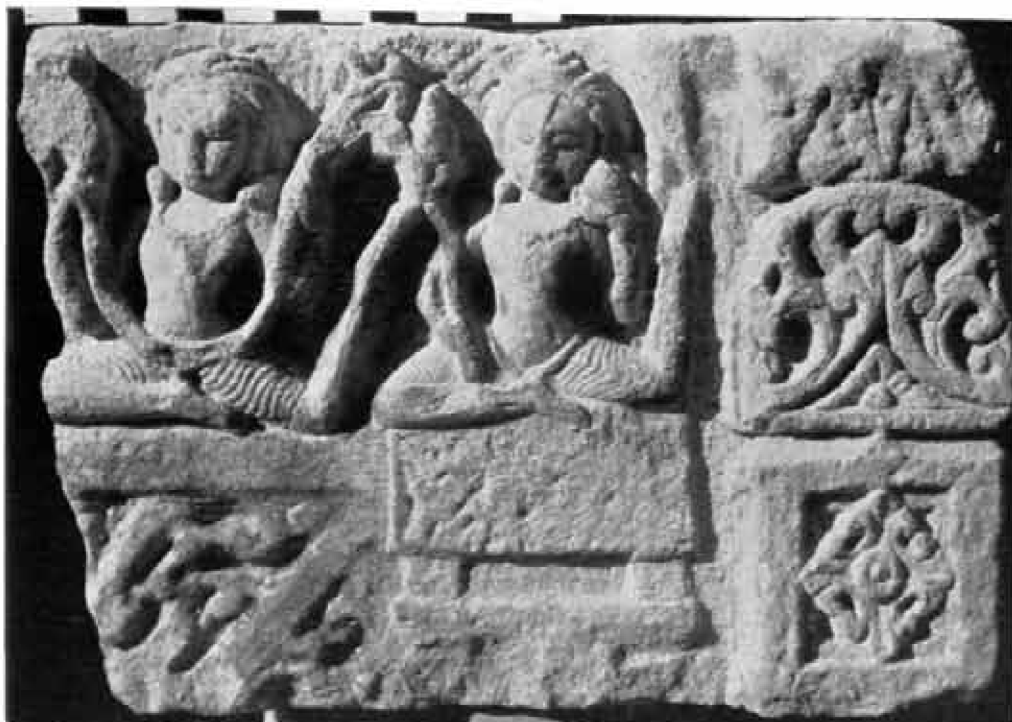


B



A

Mandi: *Trilokinath temple*. A, *before, and* B, *after repairs.* See pages 44 and 45



A



B

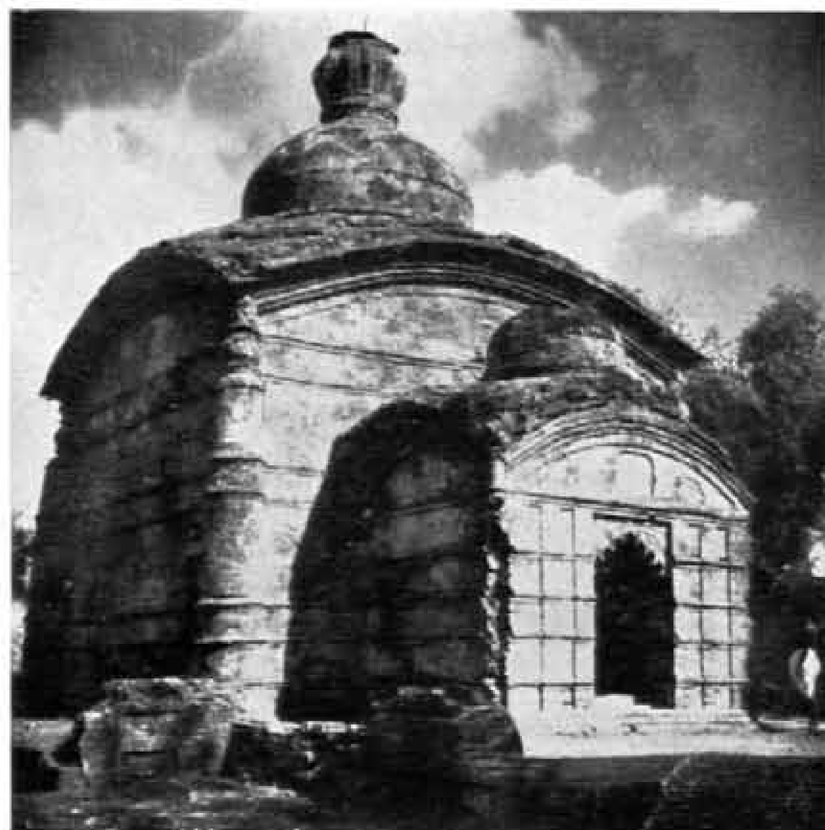
A, sculpture from Trilokinath temple, Mandi; B, sculpture from fort, Kangra. (*Scales of inches.*)
See page 45



Nālandā: general view after sifting and [illegible] of buildings. See page [illegible]

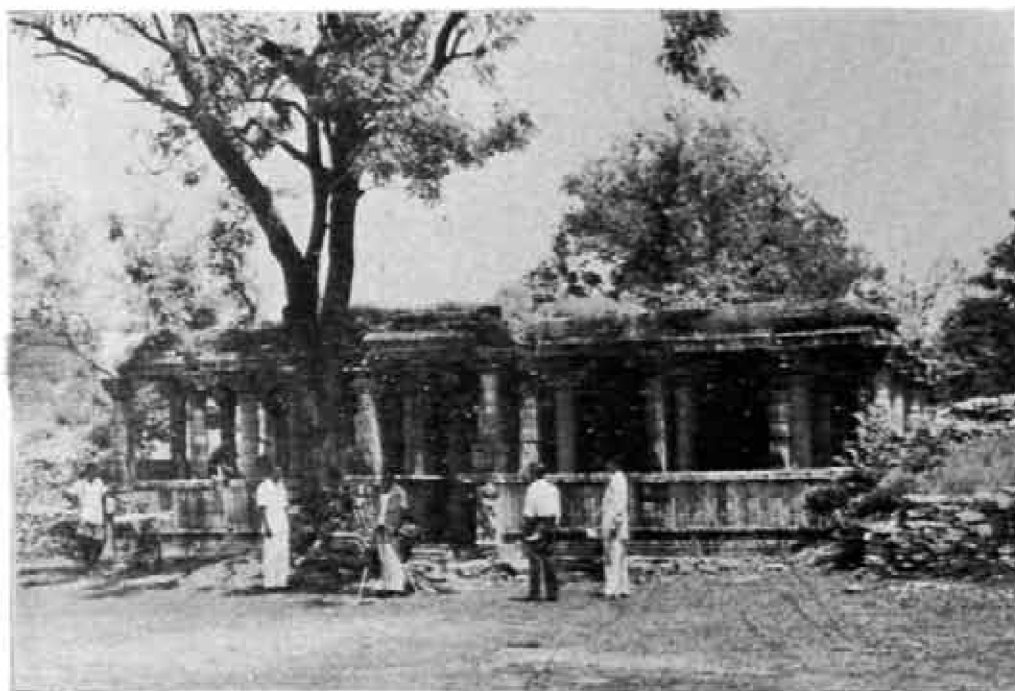


A

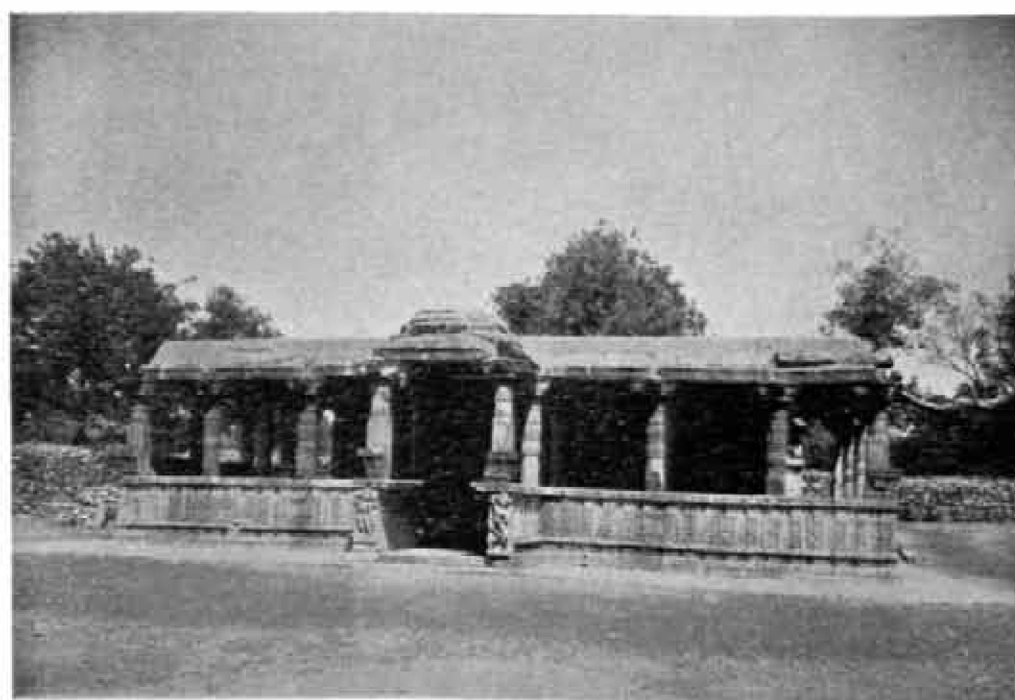


B

Udaipur (Tripura): Chaturdasa-devata temple, A, before, and B, after clearance. *See page 49*

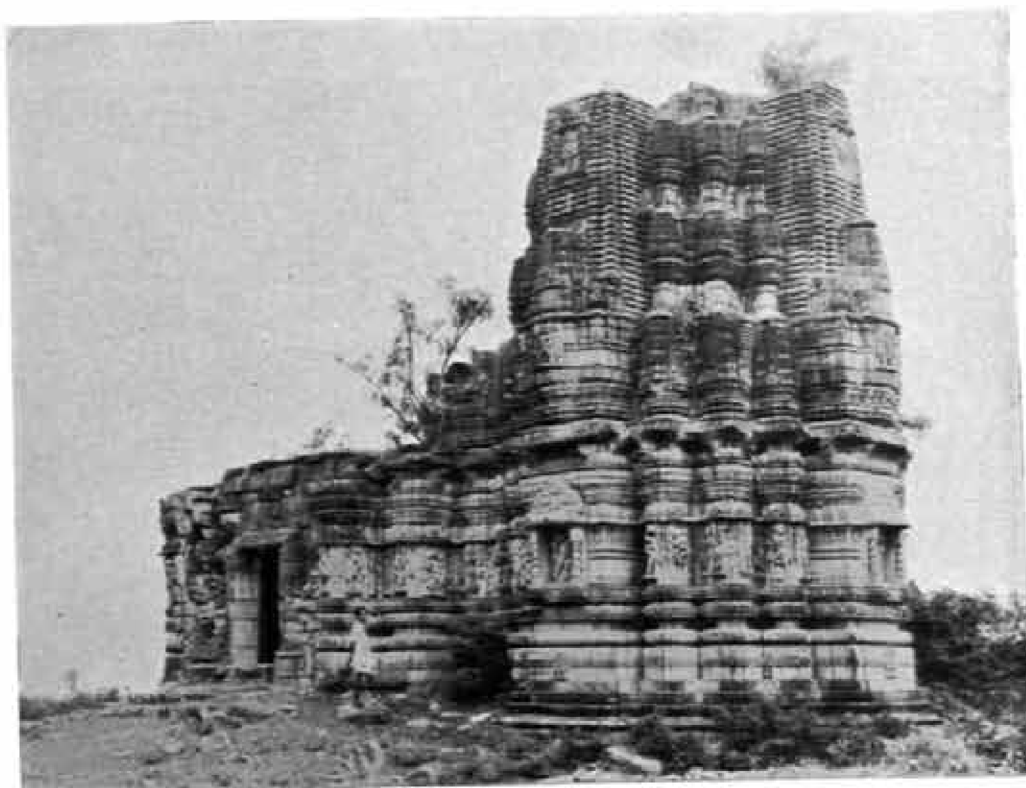


A



B

Chittorgarh: Pataleswar temple, A, *before, and* B, *after repairs.* *See page 59*



A



B

Chittorgarh: Adbhutanathji temple, A, *before, and* B, *after repairs.* *See page 60*

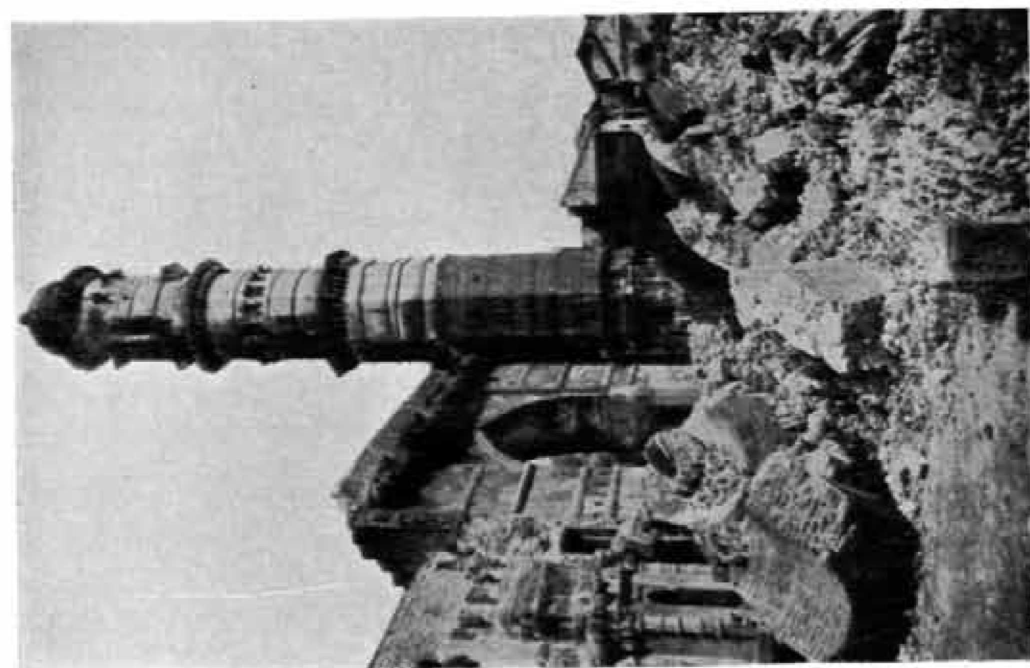


A

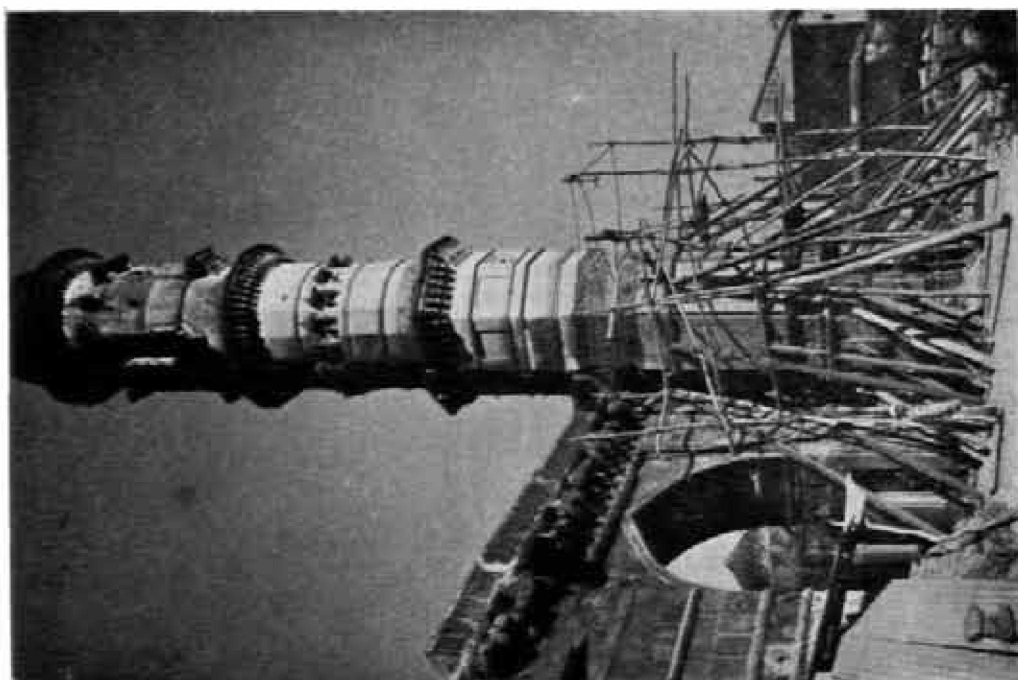


B

Chittorgarh: Fatta's palace, entrance-gateway, A, *before, and* B, *after repairs.* *See page 60*



A



B

Burhanpur: minar in Bibi Sahib's mosque, A, *before, and* B, *during repairs.* *See page 61*



Ajanta: painting in Cave 17, after chemical treatment (white patch on left represents untreated portion). *See page 66*



Ajanta: painting in Cave 17, after chemical treatment (white patch on left represents untreated portion). *See page 66*



A



B

Ajanta: paintings in Cave 17 (dark patches represent uncleaned portions). *See page 66*



A



B

Baroda: painting in Tambekarwada, A, *before, and* B, *after chemical treatment.* *See page 66*

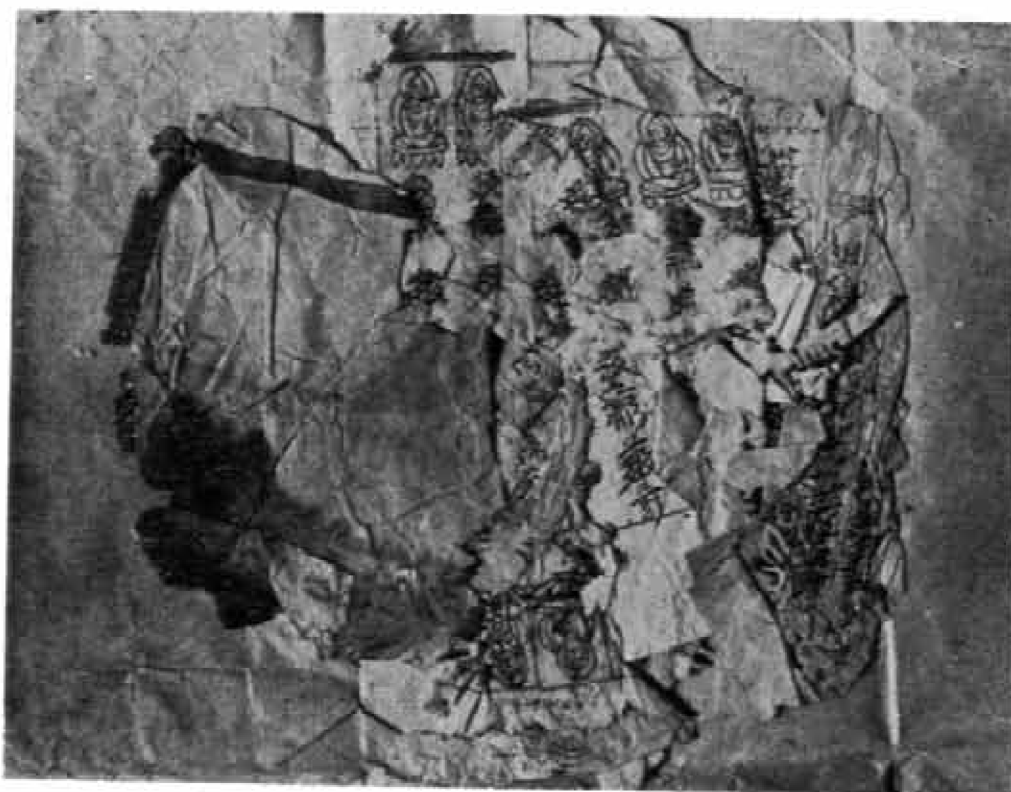


A

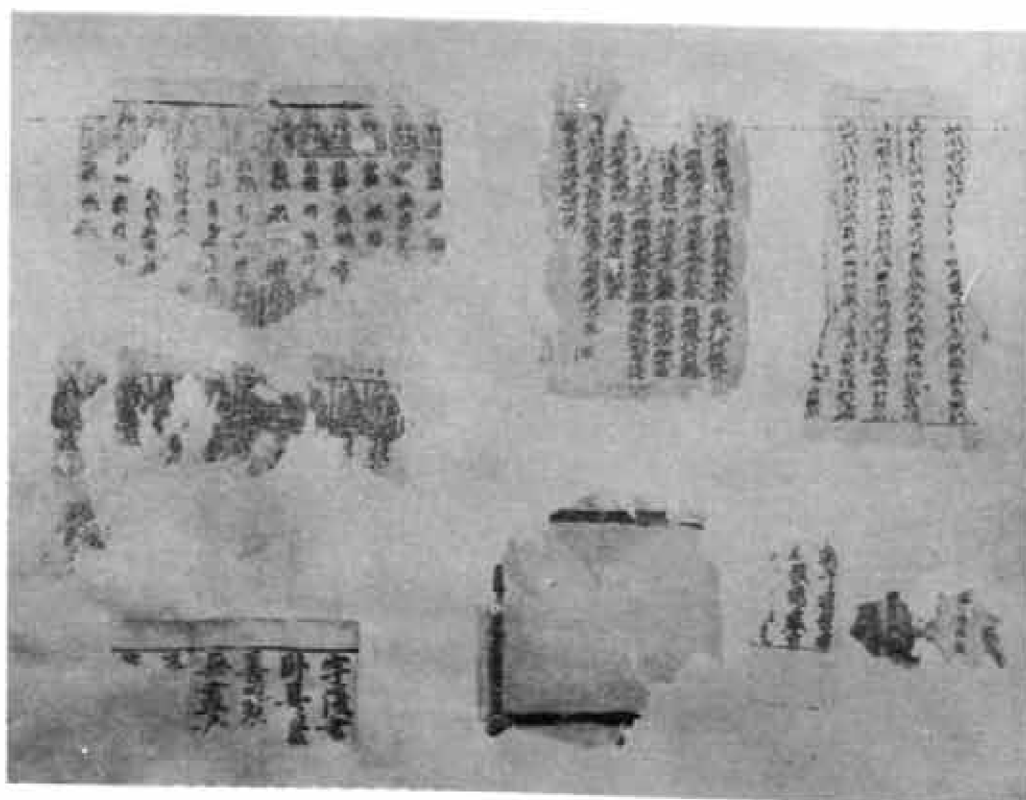


B

Baroda: painting in Tambekarwada, A, *before, and* B, *after chemical treatment.* *See page 66*

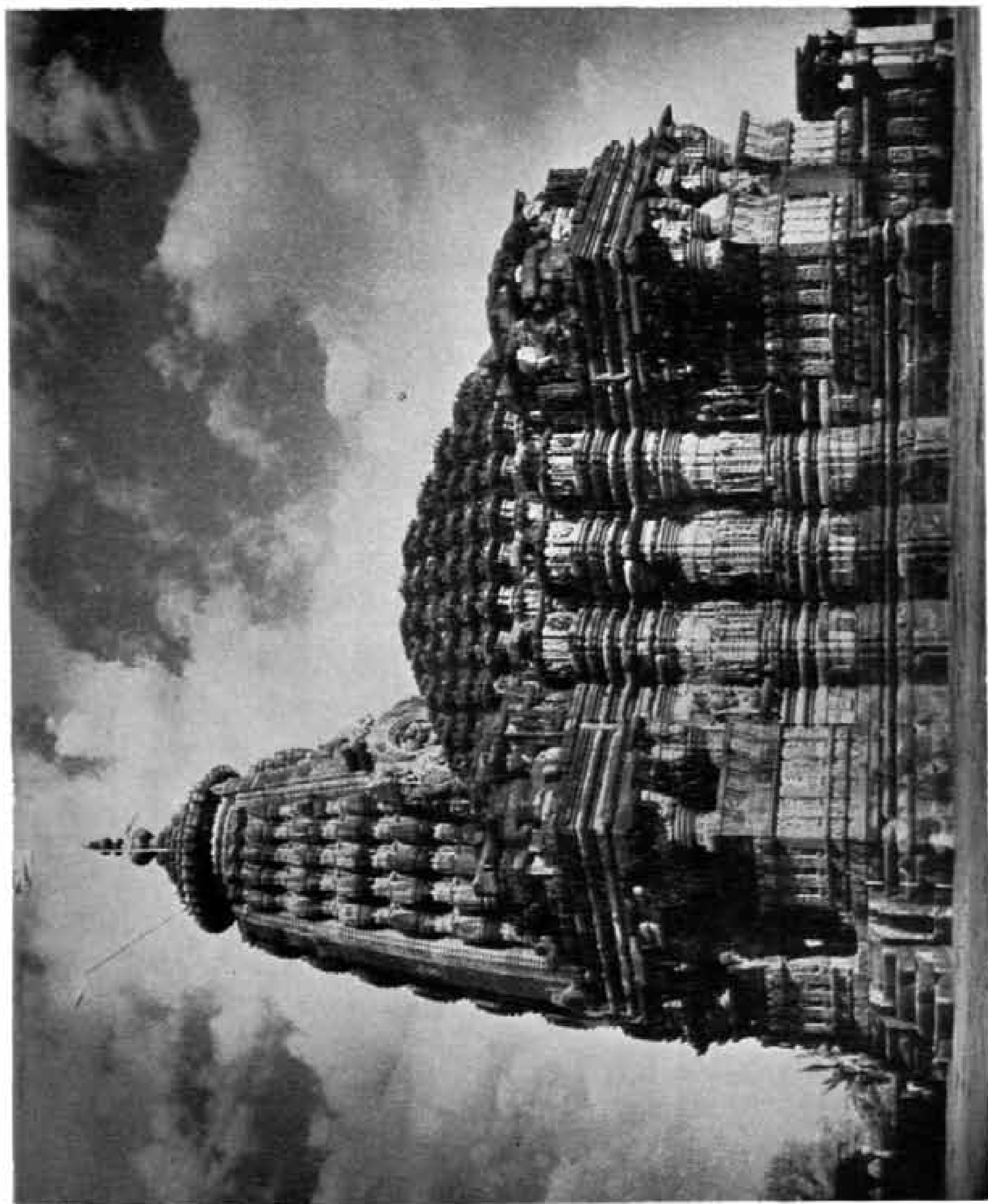


A



B

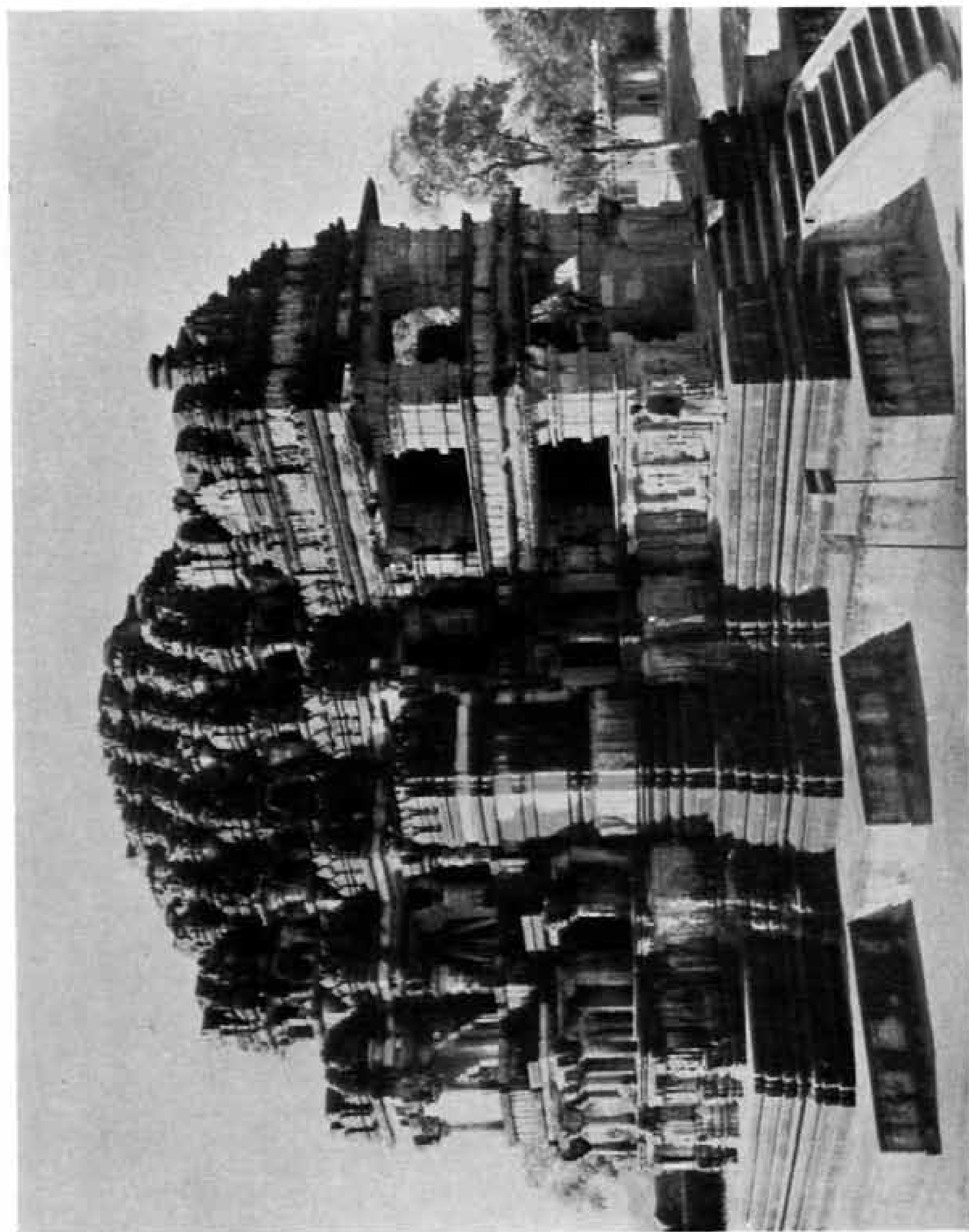
Paper manuscripts from Central Asia: A, *before, and* B, *after chemical treatment.* *See page 67*



Udaipur (Madhya Pradesh): Nilakanthesvara temple (scale of feet). *See page 69*



Udaipur (Madhya Pradesh): Nilakanthesvara temple, details of sculptures on sikhara. *See page 69*



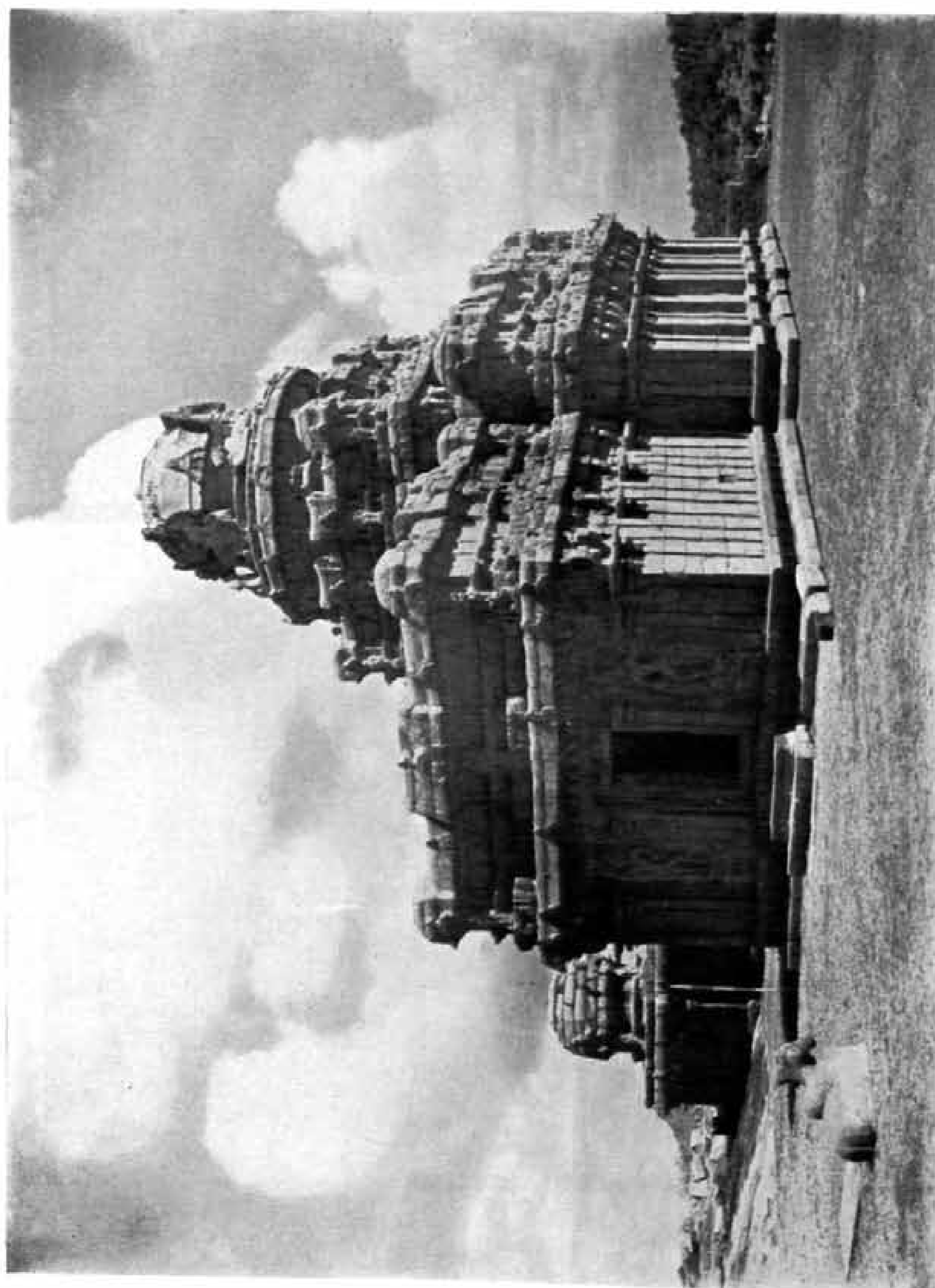
Gwalior: larger Sas-Bahu temple. *See page 69*



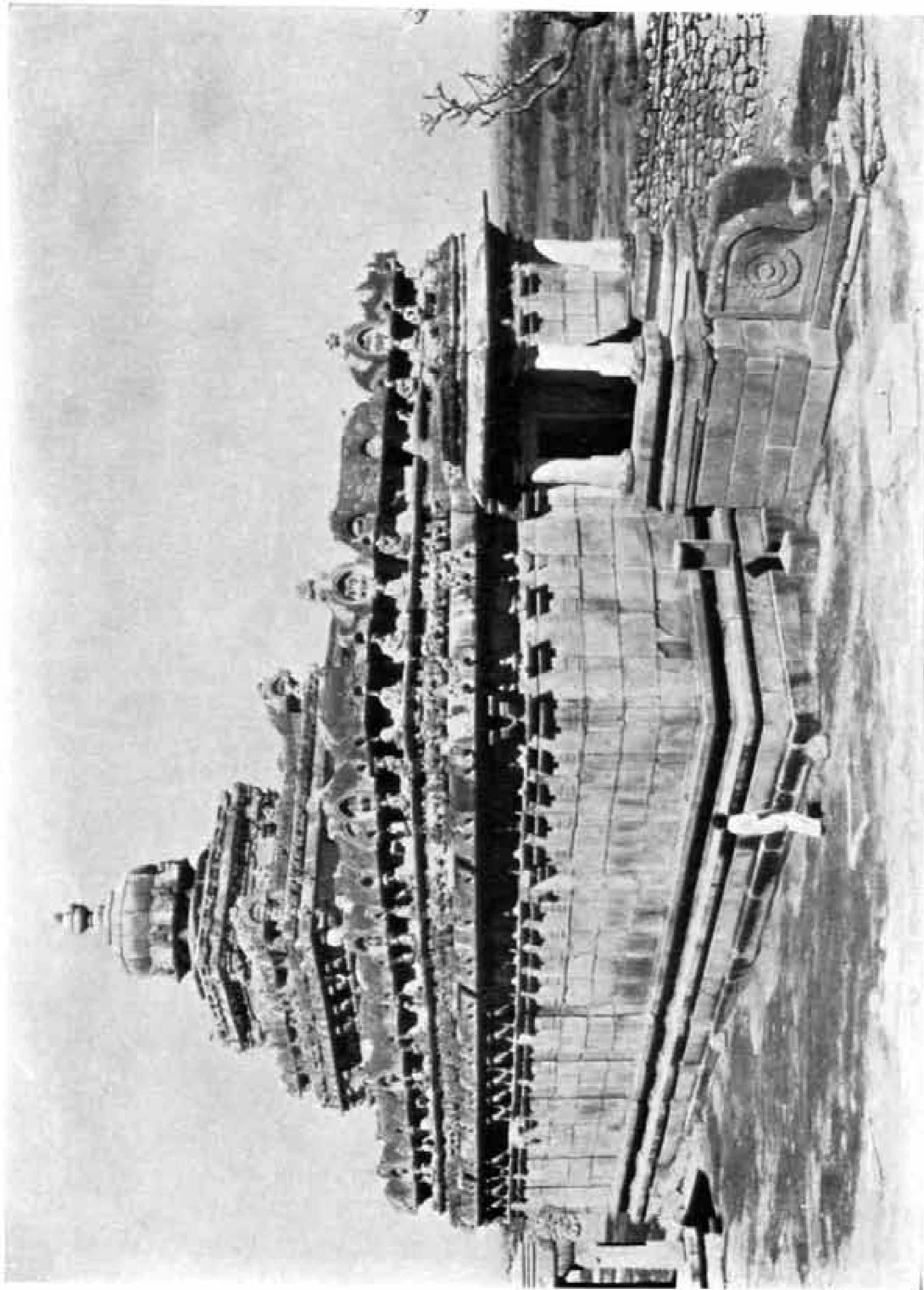
Panamalai: Talagirisvara temple. *See page 69*



Kanchipuram: Vaikuntha-Perumal temple. *See page 69*



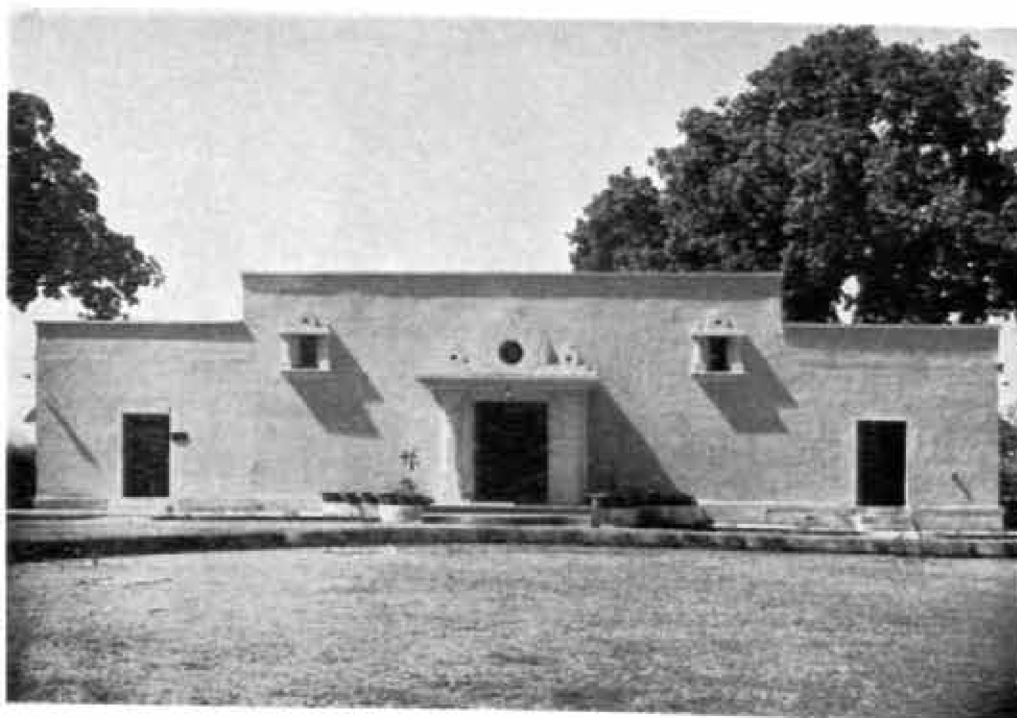
Narttamalai: Vijayalaya-Cholisvara temple (scale of feet). See page 69



Sravanabelgola: Chamundaraya Basti. *See page 69*

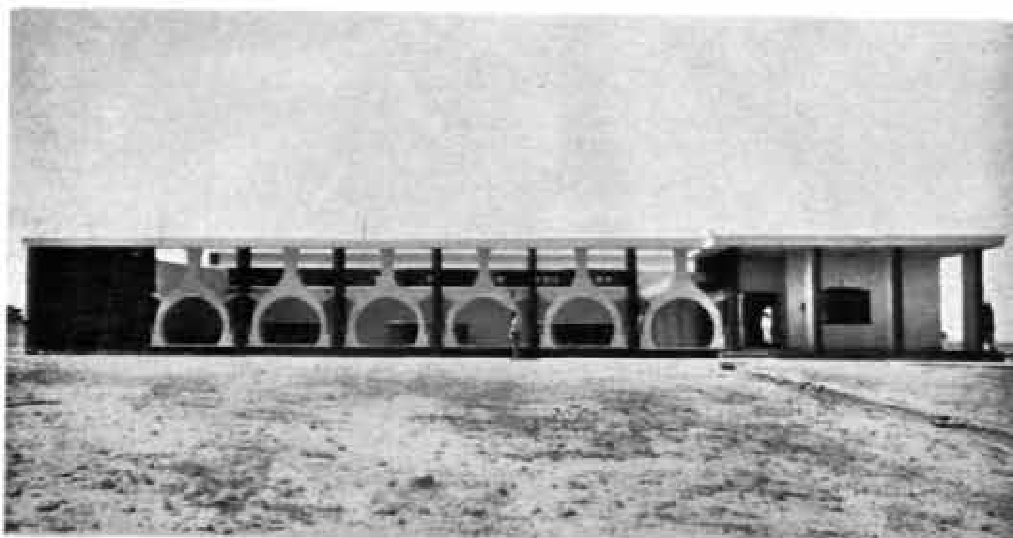


A



B

A, *Sarnath Museum, interior view of the main hall;* B, *Nalanda Museum, front view. See page 72*

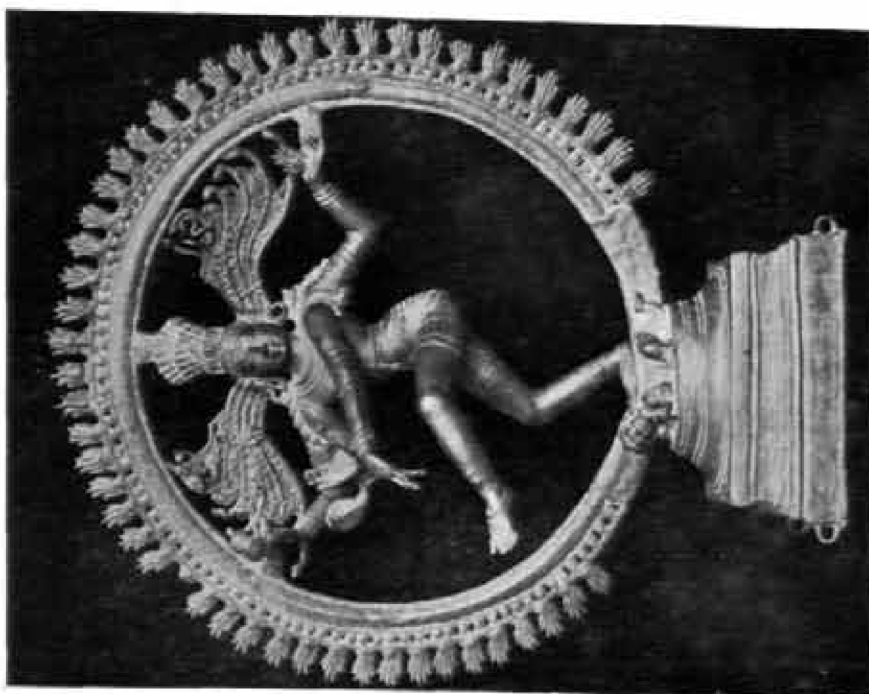


A



B

Bodh-Gaya Museum: A, *front view;* B, *interior view of the main hall.* *See page 72*



A



B

Nataraja, A, *National Museum (height 2 ft. 9 in.), and* B, *Madras Government Museum (height 2 ft. 2 in).*
See pages 71 and 74



B

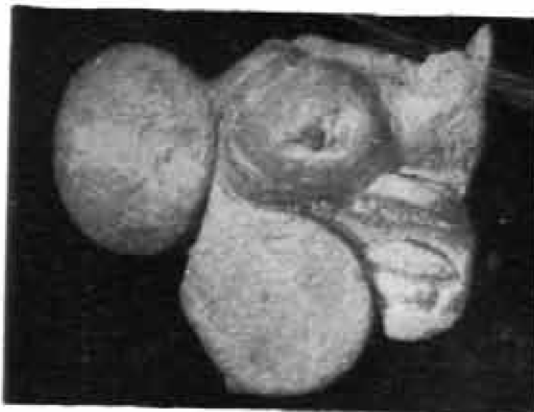


A

A, *Asutosh Museum, sandstone Vishnu (height 7 in.)*; B, *Lucknow Museum, yakshi.* *See pages 73 and 74*













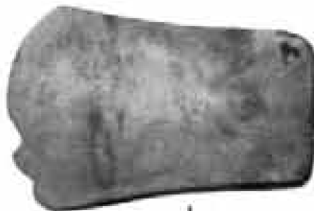
Asutosh Museum: terracotta objects from Chandraketugarh (A, B, C *and* F, *heights* 3, $3\frac{1}{8}$, $2\frac{1}{3}$ *and* $2\frac{3}{4}$ *in. respectively;* D, *diameter* $1\frac{1}{4}$ *in.;* E, *length* $1\frac{1}{3}$ *in.*). *See page 73*



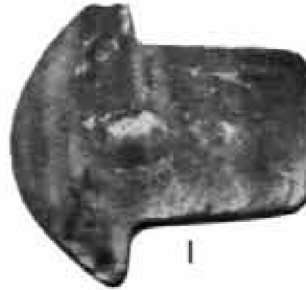
A



B



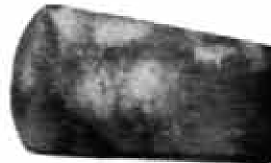
1



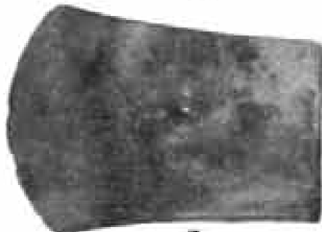
1



2

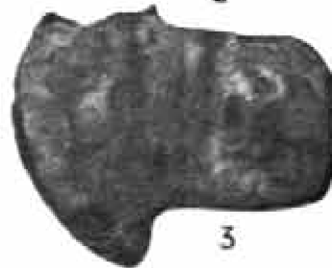


2



3

C



3

D

A *and* B, *Gauhati Museum, terracotta plaques (height 1 ft. 2 in.)*; C *and* D, *Lucknow Museum, copper implements.* *See page 74*



A

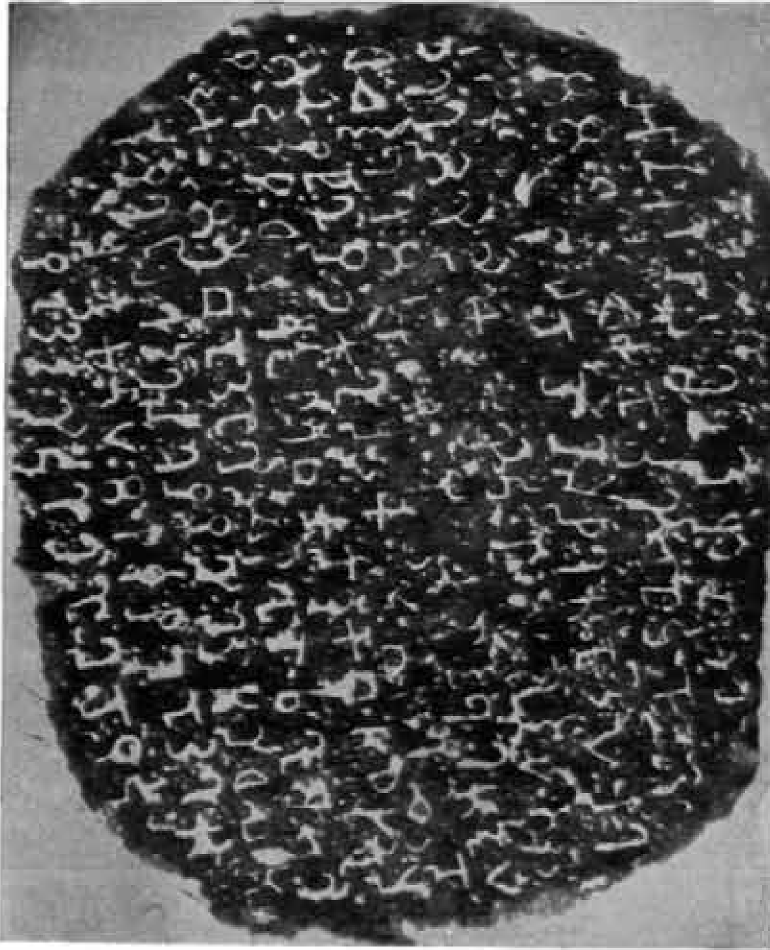


B

Panjab Government Museum: miniature paintings. *See page 74*

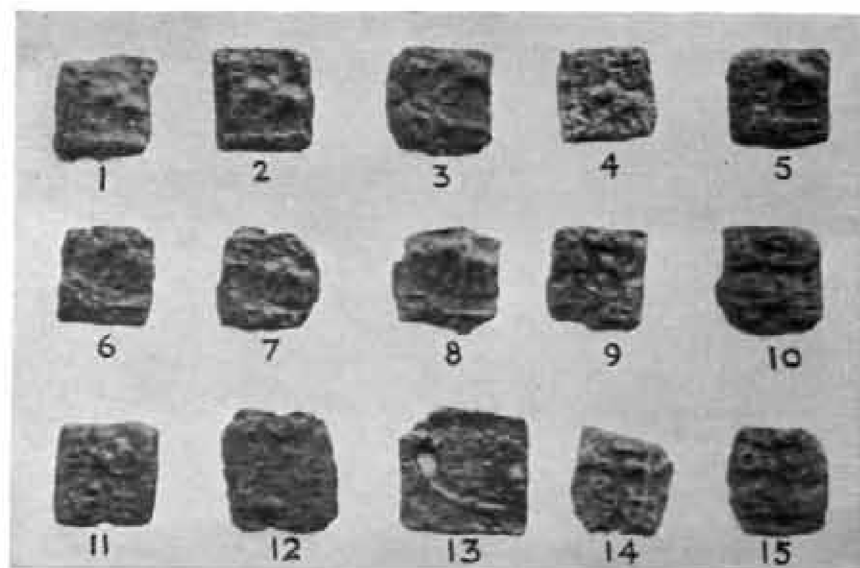


B



A

A, Prince of Wales Museum, impression of the Ninth Rock-edict of Asoka from Sopara; B, National Museum, manuscript of the Tuzuk-i-Jahangiri (length 10 in.). *See pages 73 and 71*



A



B

A, *cast copper coins* (*scale* $\frac{1}{1}$); B, *terracotta objects*. *See page 81*